Southern Power & Industry

The Industrial and Power Journal of the South a[illegible]thwest

JU[illegible]

University Microfilms Inc
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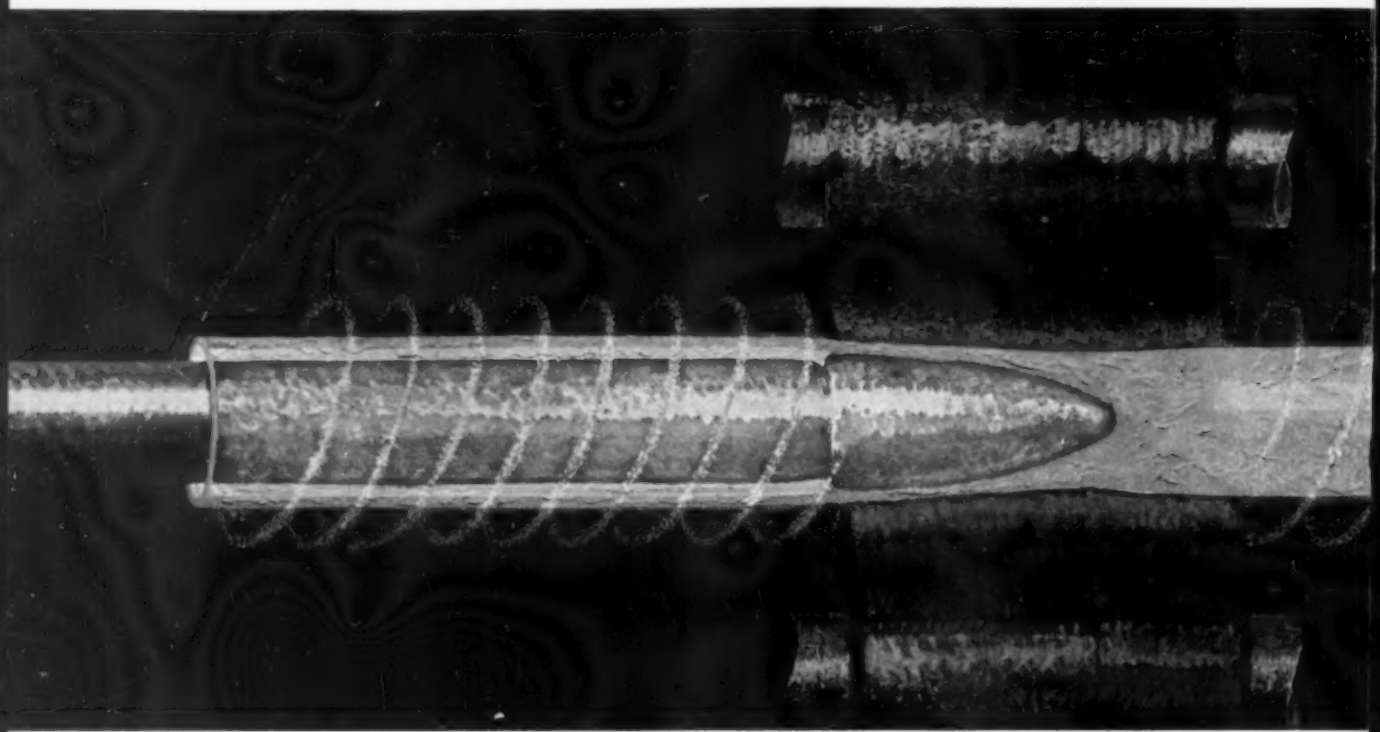
★ YOU CAN ACTUALLY WALK AROUND INSIDE THE GIRDER OF THIS CRANE — SEE P. 38

Many other Material Handling installations described in this issue — See Contents P. 3

Special Color Section tells what's new in Handling Equipment and where to get it — P. 21

What a tough way to come into the world!



The piercing operation is one of the first steps in creating seamless tubing from a solid section of steel. After we set the hot steel billet in place, we ram it. Spin it. Push its insides out. And stretch it into a tube many times longer than the original piece of steel.

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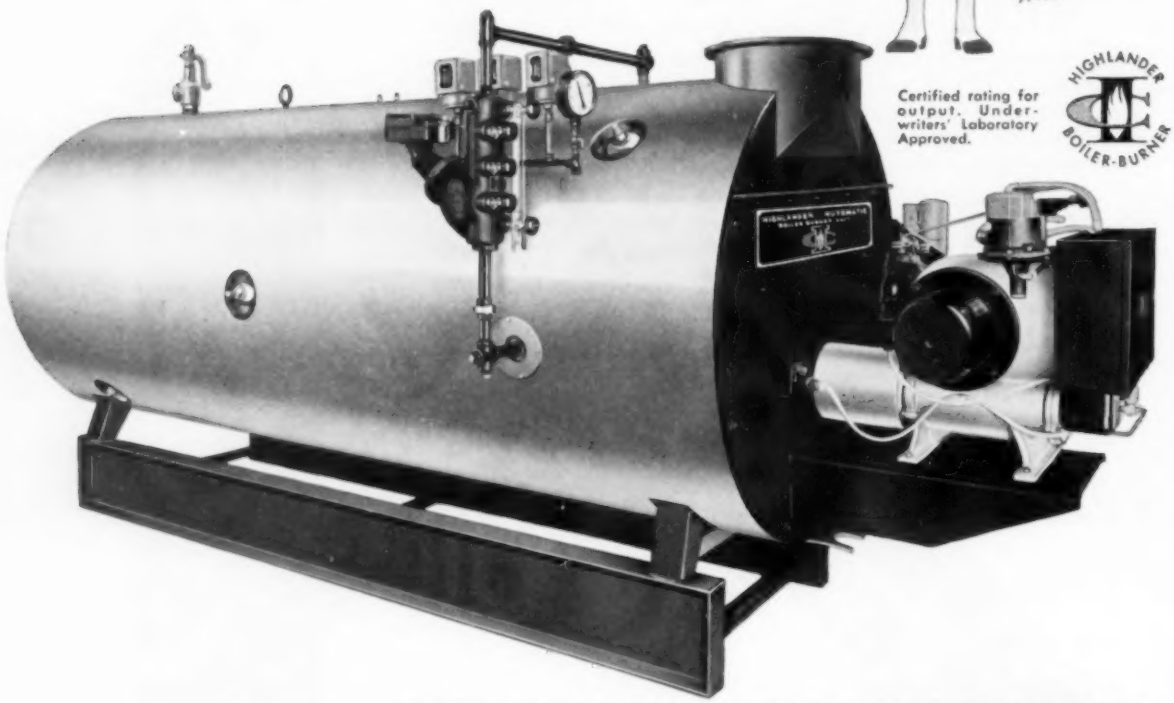

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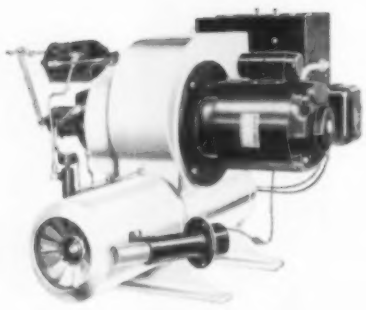

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Southern Power & Industry

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Facts and Trends

JULY, 1961

◆ HARD TO GET OUT—The National Society of Professional Engineers has suggested to a House Labor Subcommittee that present policy of the National Labor Relations Board which denies professional employees a separate decertification election from a mixed unit is not consistent with the intent of the Taft-Hartley Act.

For seven years after passage of the Taft-Hartley Act in 1947, the Board allowed professional employees in a mixed unit to petition for a separate election to determine their desires regarding continued representation for collective bargaining. But in 1955 the Board reversed itself and has since maintained that professional employees are not entitled to a separate vote. Thus professionals cannot extricate themselves from a mixed bargaining unit through a separate decertification procedure.

◆ PLATING PROCESS—An 8-page, illustrated booklet describing equipment, application techniques and plating jobs performed with the Dalic Process—a method of electroplating localized areas of a workpiece quickly without using immersion tanks—has just been published by Sifco Metachemical, Inc.

Dalic plating in some instances is claimed to be as much as 60 times faster than bath plating methods, permits application of metallurgically sound, very fine grained deposits of 19 different platable metals, plus numerous alloys, upon selected areas of a workpiece. Techniques for using the method are said to be easily learned and very little, if any, masking of the workpiece is required. The equipment also is readily portable, so that plating operations may be carried out wherever ordinary a-c power is available.

◆ LIQUID LATHE—The first production model of a "liquid lathe" for cutting materials has been demonstrated before industry representatives.

The machine, which resembles a cannon, delivers a needle point of liquid under thousands of pounds of pressure, cutting through cement, wood and tough plastic. Models for cutting and shaping metals and other materials are also being developed.

◆ TRUCK BATTERIES—Users of low-lift electric hand trucks no longer need to go to the expense and trouble of replacing storage batteries during the entire service lives of such trucks, no matter how long they last in any type of material handling operation.

Exide now guarantees owners of such trucks equipped with new Exide Nickel-Iron Alkaline batteries at least 80 per cent of rated battery electrical capacity in one-cycle-per-day service for the lifetime of these widely used hand trucks. Users charge and maintain the batteries properly with approved equipment. Any Exide Nickel-Iron Alkaline battery that fails under these conditions to deliver 80 per cent of rated power will be repaired or replaced free of charge.

(Continued on page 6)

HP

When it comes to high horsepower pumps, BJ is the big leader!

Six recent Byron Jackson orders for a total of eleven boiler feed pumps all ranged from 7,000 to 12,000 horsepower and will deliver from 3,000 to 6,750 gallons per minute!

This dramatically points up the trend toward larger, higher horsepower pumps, both standard, steam turbine and direct turbine–generator driven. And since reliability is a must with these modern, big capacity boiler feed pumps, BJ's reputation for quality and proved performance really pays off!

BW

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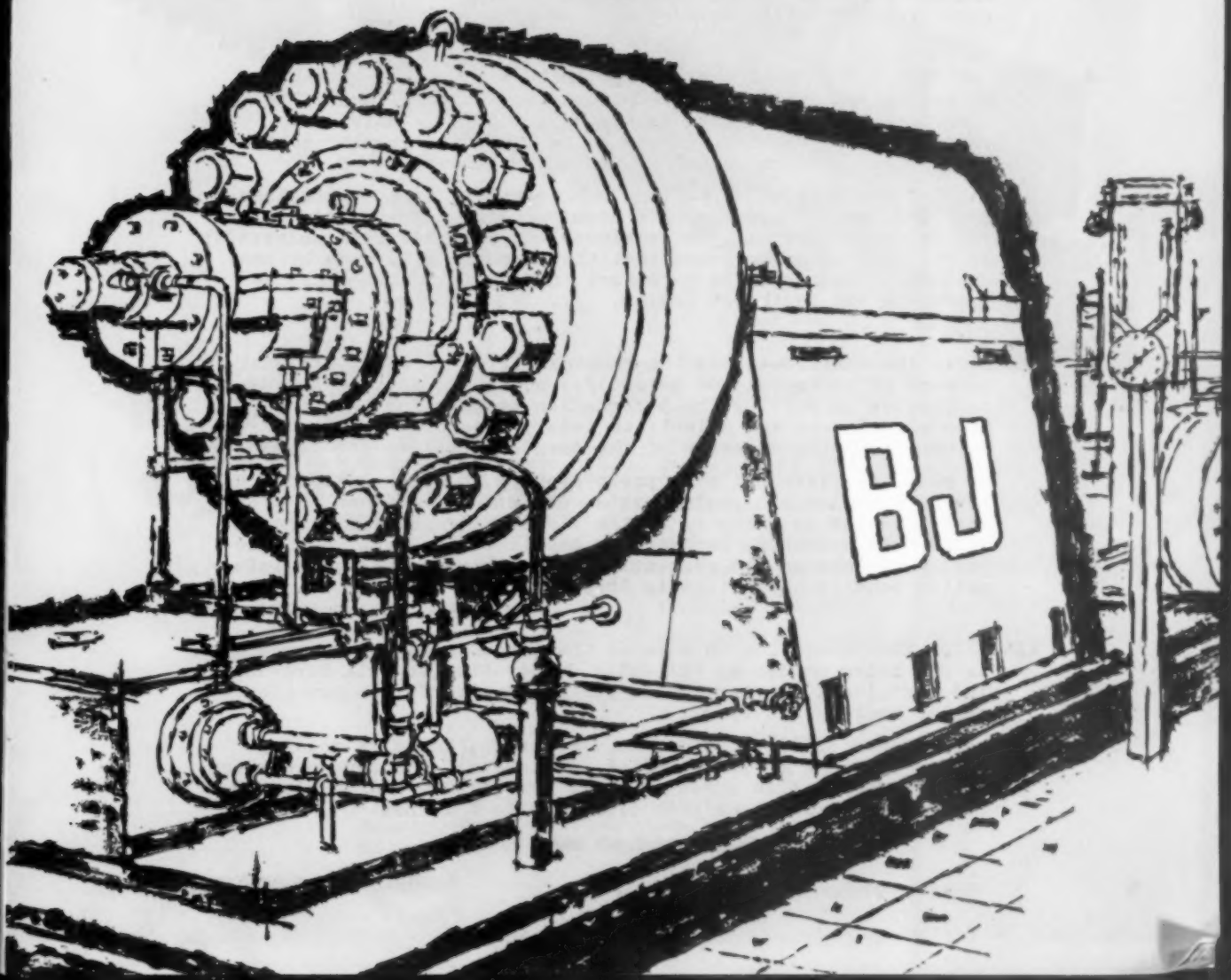

Facts and Trends (Continued)

◆ IT HURTS TO GET HURT—Employers interested in low absentee rates may wish to distribute to employees a new booklet called "Hazard Hunting." Prepared especially to encourage off-the-job safety, the National Safety Council publication guides the family through a "big-game" hunt. The big game: accident hazards.

The 10-page illustrated booklet shows how to hunt down and destroy hazards in the home, outdoors, and on the highway. "Hazard Hunting" can be a do-it-yourself project that will collect the bounty of an accident-free home for the employee and his family, assuring the employer of a man on the job. Further information and a single sample copy of "Hazard Hunting" are available from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

◆ FOLLOW THROUGH ON ATTITUDES—Many American business firms are realizing that there is little value in making surveys of employees' attitudes toward their jobs unless they are to be followed up, according to a study of 155 companies released by the National Industrial Conference Board.

The day seems to have passed, the NICB notes, when a company would make a survey just to see what the situation is. Among other principal points, the study shows that management has confidence in the survey approach. Surveys almost always reveal a need for more employee communication. It may take a year or longer to follow up a survey made in a day. There is no "one right way" to follow through after a survey.

◆ RICE HAS BIG COMPUTER—A high speed electronic computer has been placed in operation at Rice University, Houston, Texas. The computer, the largest and fastest situated on a university campus in this country, is now being used on a regular schedule by Rice University scientists and engineers.

Half of the cost of assembling the computer, or approximately $250,000, was provided by the Atomic Energy Commission's physical research program. The remainder was provided from university sources. It is anticipated that the computer will soon be made available to scientific personnel engaged in fundamental research in the Southwest region.

◆ TECHNICAL INFORMATION—It is the responsibility of America's vast network of technical and scientific societies to take the initiative in solving the information problem facing the nation's engineers and scientists today, according to Allan Ray Putnam, managing director of the American Society for Metals.

He made the statement at a press preview of General Electric's new information processing system at Western Reserve University, where the ASM is carrying on the first large-scale electronic literature searching program for American industry. The societies must take on the responsibility of making published information readily accessible to those who have need for it.

◆ KING-SIZE TEFLON—Teflon in some of the largest shapes ever produced is now being molded by the Enflo Corporation to fill burgeoning industrial and military needs for large size Teflon gaskets, seals, washers and rings.

Using a new 3,000 ton, 4-column bed press, Enflo is molding Teflon in rings up to 54 inches in diameter. The same press can also produce Teflon sheets up to 4 feet square and in closely controlled thicknesses from 1/16 inch to 6 inches.

(Continued on page 9)

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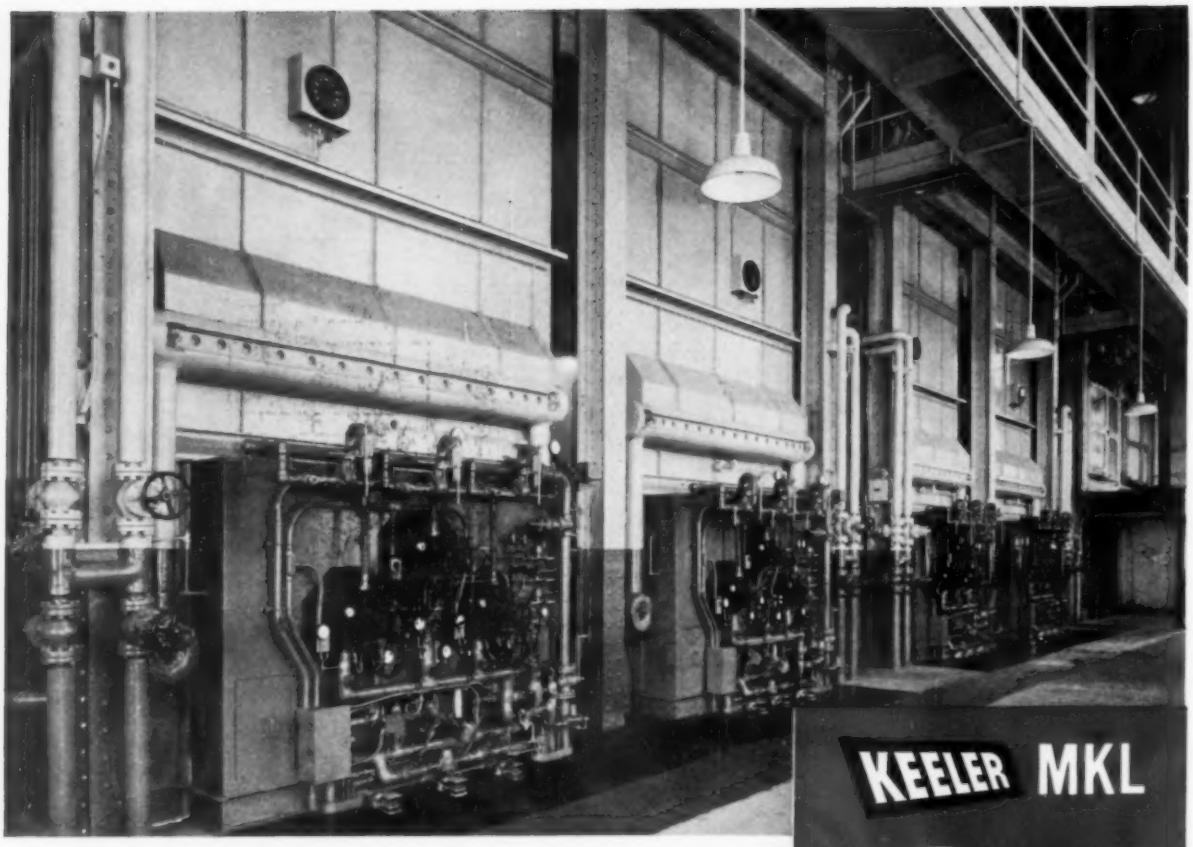


Consulting Engineers: H. M. WILSON CO., INC., Philadelphia 30, Penna.

FOUR KEELER TYPE MKL STEAM GENERATORS EXCEED EFFICIENCY GUARANTEE AT SEARS

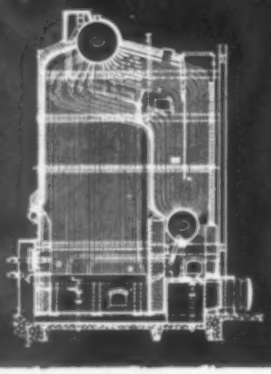
The Sears, Roebuck and Co. mail order plant in Philadelphia encompasses millions of square feet of usable space. The entire steam requirement plus adequate standby is supplied by four quick-response Keeler Type MKL Steam Generators installed in a recent modernization.

Test results have exceeded the guarantee of efficiency and their operation has been *"most satisfactory"!* The new MKL's are 40,000 lb stm/hr combination oil-gas, custom-designed units, 175 psi operating pressure. They were installed in the space previously occupied by four of the six 500-hp boilers which they replaced.

The space and versatility advantages experienced at Sears are typical of Keeler MKL's. The basic design provides true economy and efficiency with quick response to load changes. MKL's are cross drum, bottom supported type available in capacities up to 70,000 lb stm/hr. They're easy to maintain, flexible to space requirements, efficient and durable.

There's a dependable Keeler Water Tube Steam Generator for every requirement . . . from low cost package units to 100,000 lb/hr and field erected units up to 200,000 lb/hr—for all fuels, all types of firing. *Write or phone for complete information . . .*

KEELER MKL



WRITE FOR FREE BULLETINS . . .
No. MKL-1: Type MKL Boilers
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No. DK-2: Type DK Package Boilers
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ROEBUCK AND CO.
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Philadelphia

The plant serves catalog customers in 8 states and the District of Columbia. Also located here are Sears' eastern territory headquarters offices, a department store, rail and motor freight terminals and warehouses.

◆ A NUCLEAR POWER PLANT which has already been put together and taken apart once will be airlifted in sections from Baltimore to the eastern edge of the Rockies. The plant was produced by The Martin Company under contract with the U. S. Atomic Energy Commission and is called PM-1. The designation means "portable, medium power range, plant number 1."

Using a fuel core about the size of a single oil drum, the plant is designed to operate for two years at full power before refueling. It will generate 1000 kilowatts of electricity, and it will also produce heat for Air Force buildings. Millions of gallons of diesel oil would be required to match its output. PM-1 will be the first nuclear power plant to serve an operational Air Force station, and it will be staffed by specialist personnel from all three military services.

◆ BIGGER FUTURE FOR D-C—The possibility of using direct current for transmission of electric energy within the next quarter of a century was raised at the Summer General Meeting of AIEE in a paper by two Dow Chemical Co. engineers.

In Europe, experience is being gained in the operation of the d-c transmission technique that has been developed. It may be that solid rectifiers based on the super-purity silicon, which is coming into ever-increasing production, will make their contributions in this field.

◆ BRUSHES—One hundred and twenty-eight different types of brushes and the manufacturers who produce them are listed in a new directory offered by the Du Pont Company. The booklet also gives a number of general observations about brushes which may be of benefit to industrial users.

Du Pont does not make industrial brushes, but supplies leading brush manufacturers with "Tynex" nylon filament for brush filling. The 1961 edition of the brush manufacturers directory and section on how to determine a brush's quality will be sent without cost to interested parties.

◆ EMPLOYEE COMMUNICATION—A leaflet which describes employee communications programs which won top honors in the 1960 National Recognition Awards program, sponsored by the Chamber of Commerce of the United States, is available free.

The 1960 competition was the Sixth Annual Awards Program designed to recognize outstanding achievement in explaining and interpreting business and the American economic system to employees. Requests for official entry forms in the 1961 competition are now being accepted. For the convenience of those receiving the 1960 leaflet "What Makes a Winner," a Declaration of Intent to Enter is included on the last page.

◆ 500-MW TURBINES—The world's first order for 500,000 kw single-shaft steam turbo-generators has been placed with English Electric by Britain's Central Electricity Generating Board. Four of these units together with associated equipment will be built by the company at a cost of approximately $40,000,000 for installation in the first two million kw thermal station on order anywhere.

The new plant, which will supply enough power for a city of over two million people, will be near the East Midland coal fields. The first generating unit will come into operation in 1965 and the plant is expected to be fully commissioned by the end of 1967.

(Continued on page 10)

Facts and Trends (Continued)

◆ CONVEYOR BELT TAKES NEW TWIST at Ohio Power Company's Muskingum River Plant near Beverly, Ohio, to make clean side of belt ride on return idlers. This "turnover" conveyor system, developed and patented by B. F. Goodrich, prevents damage by build-up of tacky materials on idlers or pulleys.

◆ NEED A CHEAP HOUSE?—A new lightweight, dome-shaped structure 22 feet in diameter which is sturdier, more durable and costs less than a tent of equal size now is being marketed as a ready-to-assemble shelter for a wide variety of uses including industrial, agricultural, recreational and military.

The shelter is formed from prefabricated triangular panels of one-half inch thick Fomecor board which are bent and bolted together at the site in a simple geodesic design. Fomecor board is a "sandwich" of rigid foamed plastic bonded between sheets of heavy kraft paper, resin coated for water resistance. The six foot triangular panels of the dome weigh only three pounds each. Trademarked Geospace, it is a free-standing, portable dome 12 1/2 feet tall and weighing only 450 pounds but containing 352 square feet of usable floor space. It is available at $345 F.O.B. Filtered Rosin Products Co., Baxley, Ga.

Write the editors for additional information on any of the above items. SOUTHERN POWER & INDUSTRY, 1760 Peachtree Road, N. W., Atlanta 9, Ga.

. . . . . REPRINTS AVAILABLE . . . . . .

Write the editors of SPI for small quantities of the following at no charge.

- SEGCO 1,000,000 KW PLANT—A 16-page folder describing this large new Alabama plant, serving Alabama Power Co. and Georgia Power Co., is a combination of two technical articles from SPI's September and November issues.
- HOW EPOXY CAN SERVE YOU—4 pages. Tells exactly how 10 separate repair jobs were handled and describes several epoxy mixes that are good for maintenance jobs.
- ORIFICE METER INSTALLATIONS—Tells what the plant man needs to know about installation to get accurate, dependable service.
- INSPECTION REPORTS—Tells how the station chemist can maintain information on the condition of boilers, cooling towers, condensers, heat exchangers, tanks and softeners. Actual inspection sheets are presented.
- ELECTRICAL DISTRIBUTION FOR LARGE PLANT—An 8-page special report prepared jointly by Director of Facilities, the Consultants, and the Contractor — describing plans and installation of all electrical services for new plant of Texas Instruments Inc., Dallas, Texas.
- THERMAL INSULATION DIRECTORY:
  Tells where to get service and technical data.....6 pages
- WATER TREATMENT DIRECTORY:
  Tells where to get service and technical data.....12 pages
- AIR & GAS CLEANING DIRECTORY:
  Tells where to get service and technical data.....16 pages
- COMBINED GAS-STEAM CYCLE PERFORMANCE:
  First year report on new plant, West Texas Utilities Co.....6 pages

Which **Bearing** should you buy?

—They're dimensionally interchangeable, but dimension is only one of many factors to consider. At left, is a super-precision bearing, made to the most critical specifications and good for thousands of trouble-free hours of service in the proper application. This bearing is a waste of money and often a source of trouble in less demanding applications.

At right, a standard bearing suitable for applications where preload, run-out and tolerances are not too demanding.

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If a standard bearing is best, you will get it fast from Dixie Bearings. And above all, when your Receiving Department checks the bearings received against your purchase order, you'll find you have received what you have ordered—exactly with no "just as good" substitutions!

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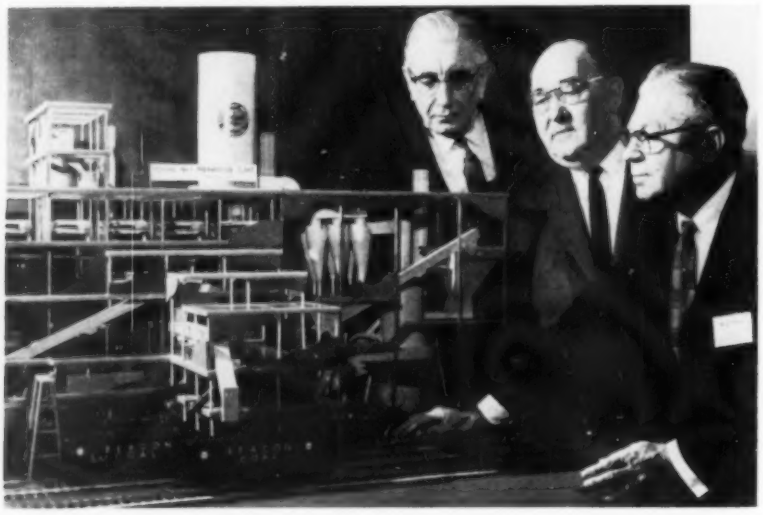
the SOUTH—SOUTHWEST

more power . . . more plants . . . more money



West Virginia Plant for Eastern Gas & Fuel

Eastern Gas and Fuel Associates executives examine model of new coal preparation plant now under construction at Federal No. 1 mine, near Fairmont, W. Va. Part of a $9,400,000 improvement program, and slated to be in operation in early 1962, the plant will be able to process 12,500 tons of steam coal per day. It includes heavy media washer, diester table, and froth flotation equipment. Left to right: Harold J. Spear, vice-president in charge of sales; H. John Harper, vice-president in charge of mining operations; and W. B. Ross, vice-president and general manager of Eastern's coal division.

Data Processing Center For Chemstrand—S. C.

A data processing center will be constructed by **The Chemstrand Corporation** in Greenville, South Carolina. Chemstrand is one of the world's largest producers of chemical textile fibers.

The processing center will be built on a four and one-half acre site in Greenville's McAllister Plaza, located in the east central part of the city. Completion is scheduled for early 1962. Approximately 50 persons will be employed.

The Greenville site was selected because of its accessibility to all major transportation, manufacturing and distribution centers in the South's vast textile industry. The company has other operations in Greenwood, South Carolina; Decatur, Alabama; Pensacola, Florida, and its subsidiary Chemstrand Research Center, Inc. at Durham, North Carolina.

Westinghouse Expands Virginia Plant

A $2 million expansion program which will include construction of three additions to the **Westinghouse** air conditioning division's plant at Staunton, Va., is scheduled to get under way in July.

A major segment will be approximately 55,000 square feet of warehouse space to be added next to the shipping department.

The second part of the expansion will be about 44,000 square feet of new manufacturing area adjacent to the present main plant building. This new area will be used for the manufacture of heavy air conditioning equipment. At present the division manufactures large equipment inside the main plant building. Areas vacated by moving this heavy equipment to the new facility will be used to manufacture small hermetic compressors.

A third part of the program is the erection of a new building to consolidate all the division's engineering, drafting, laboratory, and model shop personnel in one location.

A target date of the middle of 1962 has been set for the completion of all phases of the expansion program.

Material Handling Award Presented

The 1961 Material Handling Award of the Society for the Advancement of Management was presented to Charles S. Schroeder, who recently

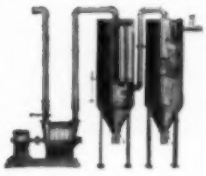
retired as The Yale & Towne Manufacturing Company's director of research, by Warren J. King, the Society's vice-president for material handling. The national award was made during the two-day Engineering Management Conference sponsored jointly by the Society for the Advancement of Management and the American Society of Mechanical Engineers.

AIR APPLIANCE DIVISION **HOFFMAN INDUSTRIES, INC.** A SUBSIDIARY OF HOFFMAN INTERNATIONAL

Designers and manufacturers of cast iron multistage centrifugal air blowers/exhausters—gas boosters—Hoffco-Vac portable and stationary industrial vacuum cleaning systems—Hoffco-Veyor pneumatic conveying equipment—cyclone separators and bag type dust collectors—Smooth-Flow pneumatic tubing and fittings—continuous metal, rubber, glass and plastic strip/sheet dryers—can and bottle blow-off systems—steam and gas operated air heaters—hose and tools—valves and accessories.

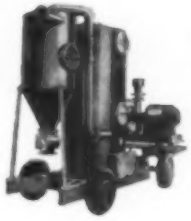
MULTISTAGE CENTRIFUGAL BLOWERS & EXHAUSTERS

Rugged cast iron Hoffman blowers deliver clean dry air or gas in continuous duty applications such as combustion, agitation, drying, vacuum cleaning, sewage and waste treatment, pneumatic conveying, air squeegee, ore flotation, circulation of liquids, asphalt blowing, etc. Pressures to 10 psig, vacuums to 12" hg, and volumes to 20,000 cfm. Outboard mounted bearings. One piece cast aluminum impellers. Dynamically balanced rotors. No internal wearing parts. Vibration free operation. Constant pressure or vacuum throughout capacity range. Suitable for direct drive by motor, turbine or engine. Common steel baseplate.



STATIONARY VACUUM CLEANING SYSTEMS

Permanently installed stationary vacuum systems ranging from 3 hp to 100 hp permit cleaning operations throughout the plant with collection at a central location. These systems will help prevent product contamination, insure better housekeeping, salvage valuable materials, eliminate manual handling and disposal. Heavy duty dust separators receive material and large filter cloth areas insure thorough separation. Suction hoses are inserted into strategically located inlet valves in piping system.



PNEUMATIC CONVEYING EQUIPMENT

Hoffco-Veyor pneumatic systems keep dry, powdery and granular materials on the flow. Permanent installations transfer a variety of materials including chemical powders, starch, plastic pellets, pharmaceuticals, etc., from one point to another in the production process. Rugged portable Hoffco-Veyors such as this trailer mounted unit, can be used to handle catalyst, clay, sand, etc., in refineries, brick plants and chemical installations.

PORTABLE VACUUM CLEANING UNITS

Maximum efficiency in industrial housekeeping can be achieved with Hoffman heavy duty portable vacuum cleaners which range from 1½ hp through 15 hp. Mobility and flexibility enables the operator to do an efficient and thorough job of vacuum cleaning anywhere in the plant. Typical of the Hoffman portable units is the 7½ hp Hoffco-Vac 75 developing 7.8" hg suction and capable of operating two hose lines simultaneously. Filtering area 48 sq. ft. Removable dust bucket with capacity of 7.5 cu. ft.

MATERIAL INTAKE VALVE

Unique feeding valves permit the introduction of dry free flowing materials into vacuum conveying systems. Design incorporates offset air and material entry ports making it possible to regulate material flow and yet allow air to enter the line for purging. Separate air inlet protects connected equipment from full suction of the system. Constructed of cast iron, stainless steel or bronze. Valves can be modified for air cylinder operation.

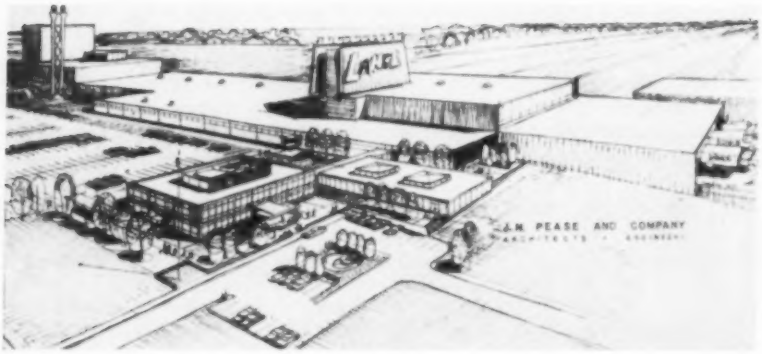
PERISTALTIC VALVE

Rubber diaphragm valve utilizes peristaltic action to discharge materials in controlled quantities. Designed to handle the type of product which can not be successfully passed through a rotary feeder, Alternate opening and closing of sheet rubber diaphragms facilitate passage of coarse abrasives or odd shaped materials. Elliptical body section and sandwiching of diaphragms insures positive closure against high differential pressures. Fail-safe feature provided in event of rupture of either diaphragm.

ROTARY DISCHARGE VALVE

These chain-driven air-locks of cast semi-steel construction discharge materials from pneumatic systems. Valves have torque limiting drive sprockets to protect against jamming and overloading. Equalizing connections permit attachment of bleed lines to vacuum or pressure source. Inspection of interior can be made through access port without disassembling valve. Fabricated and cast multi-bladed rotors are designed for interchangeability. Standard horizontal shaft gear motors.

Write for illustrated catalogues. Our application engineers are available for a survey of your production and maintenance problems without obligation



New Lance Plant Charlotte, N. C.

Construction is under way for a new $4 million plant for **Lance, Inc.,** at Charlotte, N. C. The general contract was awarded to C. P. Street Construction Co., and J. N. Pease and Co. are the architects and engineers. Both companies are located in Charlotte. Completion of the plant is expected in late 1962.

The 255,000 sq ft brick and steel structure is to be built on a 75-acre tract on Pineville Road. It will be all on one floor, except bulk raw material towers. The manufacturing plant will be connected by enclosed corridors with the office, and with the cafeteria. The company manufactures snacks, such as peanut butter crackers and cookies.

Du Pont Building Pilot Plant at Richmond, Va.

Du Pont will produce HT-1, a high - temperature - resistant polyamide which shows great promise in industrial uses including electrical insulation, filtration of hot gases, special-duty beltings and reinforcement of high-temperature hose at a new pilot plant in Richmond, Virginia.

Construction is already under way and the unit is scheduled to be completed late in 1962. It is being built in an area on the Richmond site which once housed a part of the company's rayon plant.

At present Du Pont's Richmond plants make high tenacity rayon and nylon for tire cord and other industrial products; "Teflon" TFE-fluorocarbon fiber; cellophane; and acetate and polyethylene films.

LP&L's Little Gypsy Station in Operation

Little Gypsy, **Louisiana Power & Light Company's** new steam-electric generating station and the world's first steam-electric unit capable of fully automatic operation, went into commercial operation March 30.

W. O. Turner, chairman of the board and chief executive officer, said the new facility is capable of generating 230,000 kilowatts and brings LP&L's total capability to 921,700 kilowatts. Future units are planned for construction at the Little Gypsy station, with an eventual capability of 2,000,000 kilowatts.

Named "Little Gypsy" because it is located on an old plantation site which bore that name, the new station is situated near Montz in St. Charles Parish, 25 miles upstream from New Orleans on the Mississippi River. It is on a 330-acre tract of land.

A Daystrom electronic computer control system has been incorporated into the new generating unit to maintain a high degree of efficiency and safety of operation. However the computer will not eliminate the need for human operators. Three operators per shift will be necessary and the station will require the normal number of engineers and maintenance personnel.

The computer will monitor automatically approximately 700 temperatures, pressures, flow rates, and valve and switch positions continuously. It will search constantly for the most efficient method of operation of the steam-electric unit. If the computer becomes "confused," it will "resign," and turn the generating unit over to human operators in a semi-automatic condition.

FUTURE EVENTS of Engineering Interest

Aug. 14-17: 9th Annual Short Course in Fundamentals of Occupational Safety, Louisiana State University, Baton Rouge, La. Fred H. Fenn, Dean, College of Engineering.

Aug. 28-Sept. 1: Second International Heat Transfer Conference. University of Colorado, Boulder, Colo. Sec'y, ASME, 29 W. 39th St., New York 18, N. Y.

Sept. 24-27: ASME-AIEE National Power Conference. St. Francis Hotel, San Francisco, Calif. Sec'y, ASME, 29 W. 39th St., New York.

Sept. 24-27: ASME Petroleum Mechanical Engineering Conference, Muehlebach Hotel, Kansas City, Mo. Sec'y, ASME, 29 W. 39th St., New York 18, N. Y.

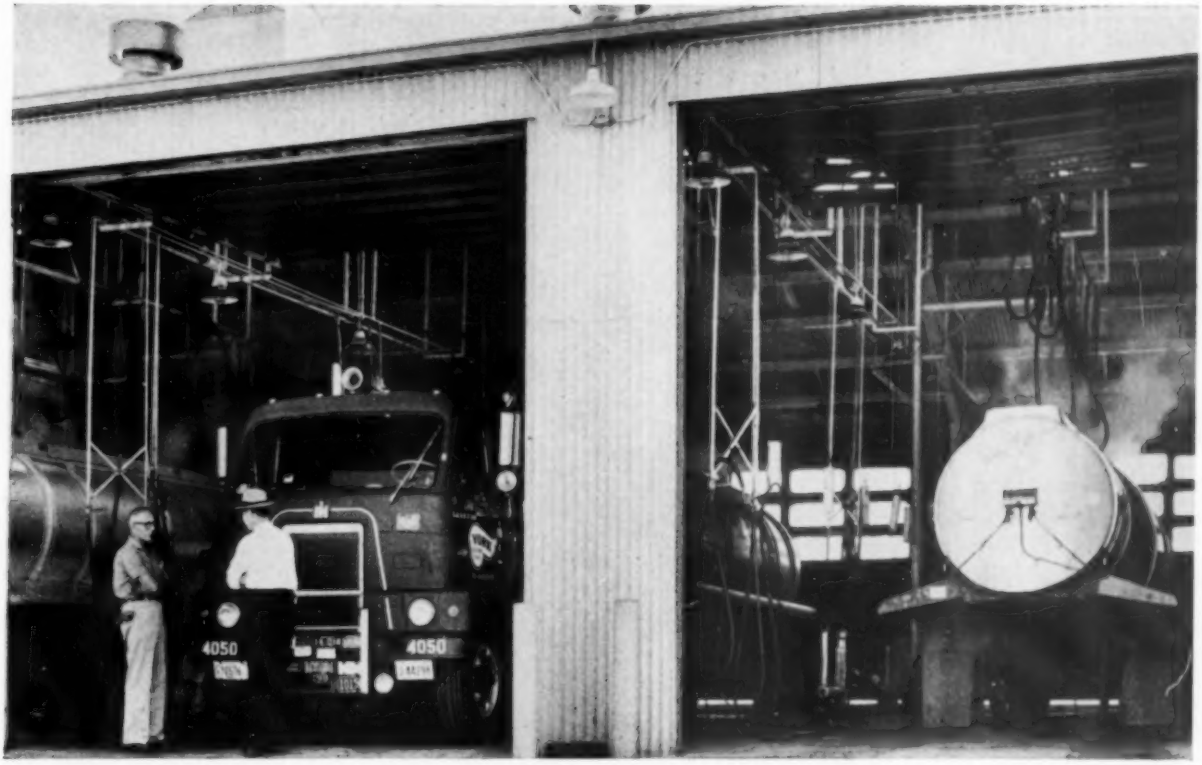
Oct. 4-6: ASME Process Industries Conference. Shamrock Hilton Hotel, Houston, Texas. Sec'y ASME, 29 W. 39th St., New York 18, N. Y.

Oct. 9-11: 17th Annual National Electronics Conference & Exhibition, International Amphitheatre and Hotel Sherman, Chicago, Ill. John S. Powers, Exhibits Chm., 228 N. LaSalle St., Chicago 1.

Oct. 24-27: 1961 Conference & Exhibition, South Central Region, NACE. Shamrock Hotel, Houston, Texas. T. J. Hull, Exec. Sec'y, NACE, 1061 M&M Bldg., Houston.

Nov. 27-Dec. 1: 28th Exposition of Chemical Industries, New York Coliseum. E. K. Stevens, International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Nov. 27-Dec. 1: Regional Conference, Southeast Region, NACE. Key Biscayne Hotel, Miami, Fla. T. J. Hull, Exec. Sec'y, NACE, 1061 M&M Bldg., Houston 2.



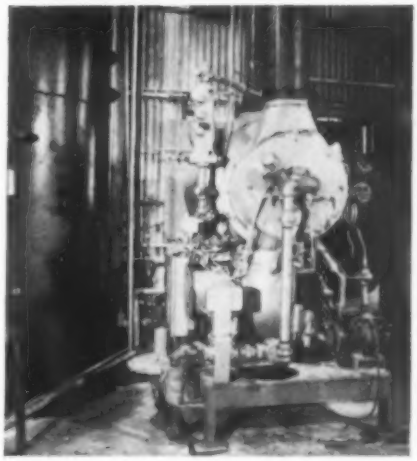
York Transport cuts cleaning time in half with Texsteam Coil-N-Shell steam generator

York Transport hauls everything from fish oil to solvents in its fleet of trailers. Keeping these trailers clean and on schedule requires steam and lots of it, according to N. J. Foster, maintenance foreman. Before York Transport installed its Texsteam 70 hp Coil-N-Shell industrial steam generator, portable steam cleaning equipment was being used. One portable unit required 65 to 75 minutes to handle a three-compartment trailer.

With the Texsteam Coil-N-Shell steam generator, Mr. Foster has *increased* cleaning capacity to three trailers at a time and has *cut* the cleaning time to an average of 30 minutes per trailer! And there is enough additional steam capacity available for the maintenance shop's requirements even with three trailers on the steam racks.

Cleaning racks are more efficient, require less operating personnel with "in-place" steam generating equipment. The Texsteam Coil-N-Shell units require minimum space, provide maximum capacity; available in sizes from 35 to 300 hp with 5 to 150 psig steam outlet pressure.

Cut your steam cleaning costs—put your equipment back in service faster with a Texsteam Coil-N-Shell steam generator. For complete specifications and operating data, write for Coil-N-Shell Bulletin 528 CSA.



This Texsteam 70 hp Coil-N-Shell steam generator provides steam for both cleaning racks and maintenance shop at York Transport's Houston terminal.

Steam Generating and Heating Division TXT TEXSTEAM *Corporation*

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Gas-fired bending furnace heats alloy steel piping at controlled rate to retain the metal's special properties.

Grinnell shop-fabricated piping is 3 ways better than field-fabricated piping

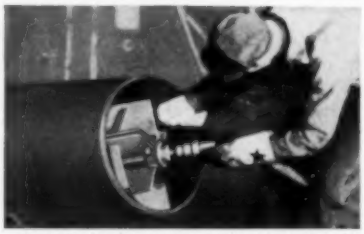
1. Strict quality control. Piping fabricated in the Grinnell shop is made under the strictest quality control . . . with the help of interpretive engineering, metallurgical research, skilled personnel, specialized facilities and rigid inspection at every critical step. Piping fabricated in the field is not made under these ideal conditions.

2. One-company responsibility. Shop-fabrication by Grinnell makes one experienced organization responsible for material procurement, engineering, fabrication and delivery. These many interrelated factors are kept in balance to give you quality at an economy price — no runaway costs.

3. Costs known in advance. With Grinnell, you know all costs — including shop sketches and planning, materials, power services, expendable tools and supplies — *before* you start the job.

Grinnell shop-fabricated piping always meets your exact specifications . . . whatever the size of the job. For your next piping installation, write: Grinnell Company, Providence 1, Rhode Island.

Special jigs and turntables allow Grinnell operators to weld from best positions, assuring superior weld quality.



Lagonda cleaning removes sand, scale, rust, weld spatter, other foreign matter from inside piping.

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Pipe Fittings, Valves, Pipe Hangers, Prefabricated Piping, Unit Heaters and Piping Specialties
Branch Warehouses and Distributors from Coast to Coast

PLANT PERSONNEL

Louis W. Brummer has been appointed director of The Chemstrand Corp.'s Data Center, now under construction at Greenville, South Carolina.

Knox Glass, Inc., has named **Robert S. Simpson** plant manager for its new multi-million dollar manufacturing facility at Forest Park, Georgia.

L. M. Shadgett, vice-president of Georgia Power Company, and formerly Athens division manager, is now vice-president and assistant general manager at the company's Atlanta headquarters. **Ben W. Burton** succeeds Mr. Shadgett as vice-president and Athens division manager.

Plant operations manager for General Electric's newly expanded switchgear manufacturing plant at Chamblee, Georgia, is **William A. Armstrong.**

General Electric Expands Georgia Plant

General Electric's switchgear manufacturing plant in Chamblee, Georgia, has tripled its employment and increased its production area 25 per cent since it began operations less than three years ago.

A new 10,000-square-foot wing, built and equipped for steel-fabrication operations, boosts the plant's manufacturing area to 50,000 square feet.

The Chamblee plant was established primarily to serve the Southern market. Now, with the addition of steel-fabrication facilities, it becomes production headquarters for the full line of G-E switchboards and panels.

Ohio Rubber Company Opens Arkansas Plant

The Ohio Rubber Company, a division of The Eagle-Picher Company, recently began operations at its $3,500,000 plant at Fort Smith, Arkansas. Construction started early last year, and completion was ahead of schedule.

The 190,000 sq ft plant combines the newest engineering and manufacturing concepts. It has been designed for easy and economical expansion.

Products include molded precision rubber parts for oil field, automotive and general industry, and semi-pneumatic tires for industrial and other applications. Fort Smith was selected as location for this fifth Ohio Rubber Company plant, because of its proximity to large automobile assembly plants, the petroleum industry, and for its strategic position to participate in the rapid industrial expansion of the South and Southwest.

Chance Vought Opens New Electronics Plant—Texas

The new $3,500,000 plant of the Electronics Division of **Chance Vought Corporation,** located in the Great Southwest Industrial District near Arlington, Texas, is now in operation.

The functionally designed 80,000 sq ft building is complete with the most modern production and development facilities available to the industry. It is a single-story, air conditioning structure occupying a twelve and one-half acre site. The division has an option on an additional seven and one-half acres for future expansion.

Grouped under the one roof are all the units necessary to the operation of an autonomous electronics organization — engineering and manufacturing facilities, five laboratories, administrative, marketing, quality control and finance offices.

Included in the laboratory complex are computer, servomechanism, fluids, microwave and environmental test facilities.

Clean rooms supply virtually dust-free air for assembly of electro-hydraulic units for space vehicles and other precision items. An "air shower" system cleanses dust particles from both individuals and parts before they enter the room through an air lock.

An extremely fine filtering system holds contaminants in the air to fewer than 500 particles per square foot, compared to 40 times that number, for normal air conditioning. The atmosphere is kept at a higher pressure than that of surrounding areas to prevent dust from entering, and entry is restricted to authorized personnel wearing lint free garments over clothing and special shoe coverings.

(Continued on page 71)

INDUSTRY SPEAKS

Developer Reports on New Nuclear Fuel Particles

USE OF EXISTING high efficiency steam generating equipment coupled directly to an economical nuclear reactor is expected to become possible through use of a new nuclear fuel. Fueled Pressure Spheres developed by High Temperature Materials, Inc. "will allow generation of uncontaminated 1200 F steam at 5000 psi without auxiliary heating or heat exchangers."

Radioactive by-products of the fission process are contained in conventional reactors by isolating complete stages with heavy shielding, intermediate heat exchangers and elaborate purification systems. "The HiTemp Pressure Spheres contain these fission gases within an impervious pyrolytic graphite coating applied over each separate minute fuel particle. The fact that pyrolytic graphite will not react with most available coolants affords significant construction and operating economies by allowing direct generation of uncontaminated steam.

"The high temperature strength provided by the PG coating allows operation at efficient reactor temperatures without the dissipation of radioactive by-products. At 4500 F the pressure of fission gases to be contained within each fuel particle would reach 80,000 psi but would require only 40 to 80 microns of PG over a 100 to 300 micron diameter fuel particle.

Significant savings in fabrication and handling costs result from the combination of impermeability and strength unique to pyrolytic graphite. The coated, sand-size fuel particles have been dispersed within 2½ inch graphite balls using low cost techniques to attain near optimum fuel density. These balls may then be loaded and unloaded from a reactor as though they were tennis balls pouring from a can."

Dr. Frank Pittman, Director of the Reactor Development Division of the A.E.C., has called the process "one of the most exciting developments in the fuel business." Speaking before the Atomic Industrial Forum on December 14, Dr. Pittman stated: "Irradiation of graphite matrix containing UO_2 coated with pyrolytic graphite has been carried out at quite high temperatures for extended periods without any evidence of fission product release. If this data is confirmed, the possibilities for this type of element are almost unlimited."

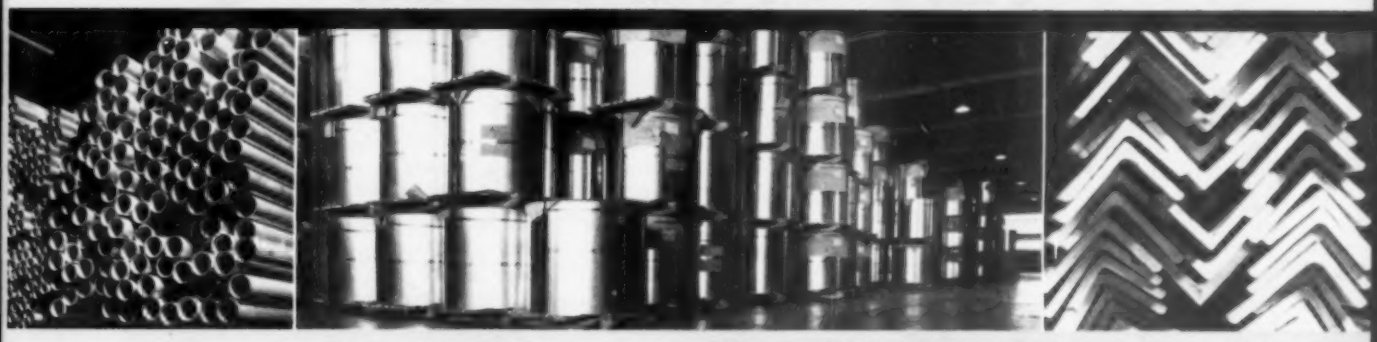
Results of tests now in progress indicate fuel economy will also be improved by reducing the costs of fuel reprocessing. Chemical reprocessing of metal clad fuel elements costs a minimum of $56,000 a batch, and is performed when the metal cladding presently used begins to break down, rather than when the fuel is exhausted." Reprocessing of PG clad fuel may be accomplished by a crushing and gravity separation process at the end of the fuel's useful life. Further economies result from the spectroscopic purity of pyrolytically deposited graphite and the high neutron economy of graphite."

The integrity of the coated particles has been subjected to rigorous testing, according to High Temperature Materials, Inc. "Particles have been cycled from room temperature to 3632 F repeatedly, followed by boiling in nitric acid. These tests have shown no increase in activity over background levels."

"Irradiation tests by the Atomic Energy Commission at the Oak Ridge National Laboratory are being conducted."

METALS

ON RASCO'S FLOOR



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MEMPHIS, TENN. 703 North Royal Ave. JA 5-4717	**MIAMI, FLA.** 3690 N. W. 52nd St. NE 5-0647	**RALEIGH, N. C.** 1431 Courtland Dr. TE 4-6221	**RICHMOND, VA.** 1910 Petersburg Pike BE 3-9693	**SAVANNAH, GA.** 309 Stiles Ave. AD 6-2461	**NASHVILLE, TENN.** 700 Harrison Street AL 5-1152

TIMELY COMMENTS

Plant Locators Want Facts on Area

NEARLY EVERY area in the country is seeking new industries to improve employment, raise the tax base and improve prosperity. Leading citizens, especially those active in Chambers of Commerce, are generally aware that the best "bait" is an accurate evaluation and display of local assets: social, political and natural.

Of these three elements, social and political conditions are subject to improvement, and natural assets are subject to conservation and intelligent utilization. But perhaps first in importance is accurate evaluation of natural resources.

Quick to recognize the need for industrial expansion are the utilities, the transportation companies, and the banks. Practically all power companies, railroads and banks have statistical and new business departments working closely with the Chamber of Commerce to bring in new industry. Their studies of natural resources are usually most accurate and complete. They recognize the disastrous effects of industrial failures, and they sincerely want all new industries to prove prosperous and permanent.

An outstanding example of good work in long range planning is the *Report on Water Resources in the Houston-Gulf Coast Area.*

The authoritative study was made by the Houston engineering firm of Lockwood, Andrews & Newnam, Inc. who were commissioned by Texas National Bank of Houston. The results have been compiled into a technical report which is now available to industries throughout the United States.

Unlike many regions of comparable size and industrial activity, the Upper Gulf Coast has always enjoyed a huge surplus of low cost water. This very abundance has discouraged advanced planning on an interurban basis for regional water development and allocation plans.

In 1960, however, a plan was adopted to assure that industry's demands for water in the Houston area, including the very promising Lower Trinity Valley, will be satisfied well into the next century.

The next step was to make industry aware of the vast and readily available water surplus on the Gulf Coast. While it was well known that the region boasts many fine seaports and that its petroleum refining and petrochemical processing capacity is the greatest in the world, there was no accurate, up-to-date source of information on the composite picture of all resources available for outside investors and site planners.

Completed late in April of this year, the engineer's report includes detailed information on the immediate ground and surface water supplies, potential supply and projected demand through the Year 2,000, maps of water storage reservoirs, water supply canals both public and private, and ground water distribution.

Highlights of the report are:

SUPPLY: A water surplus of 325 million gallons daily is available immediately for new uses in the Houston industrial complex. By 1966 projects approved and underway will increase this surplus to 1,742 mgd. Total present supply of 1,800 mgd is far in excess of the most liberal demand projections through 1966, when total supply will increase to 3,492 mgd.

DEMAND: Total present demand for industrial, municipal, domestic, and irrigation requirements is 1,475 mgd. Should this demand double in the next five years alone, the area would still enjoy a surplus exceeding 500 mgd.

COSTS: Houston's published rates for industrial raw water are the lowest on the Gulf of Mexico, falling into the lowest third of all major rates in the U. S. Even with these low rates, the funds for expansion of water facilities in Houston are derived solely from revenue bonds retired on profits of the municipal system. By 1966, cost of raw water to municipalities will decrease as new supplies from both the Brazos River and Houston, Lake Livingston become available.

Requests for the water survey should be typed on company letterhead stationery and directed to Business Development Department, Texas National Bank, Box 2559, Houston 1, Texas.

A Special Reference Section

WHAT'S NEW AND WHERE TO GET IT

Material Handling

CATALOGS AND BULLETINS

Reference literature available from manufacturers to help solve handling problems and apply materials and equipment . . . . . Use Reader Service Card . . . . . Page 61

S-1—Pneumatic Conveyor Systems—Bulletin P58G, 4 pages, describes many types of pneumatic conveyor systems for handling bulk materials. — NATIONAL CONVEYORS CO., INC.

S-2—Gas Fork Trucks—Catalog describes extremely maneuverable, easy-to-operate trucks, with standard full capacity lifts up to 144" and higher lifts available. Presents pneumatic-tire models for indoor-outdoor work. — BAKER INDUSTRIAL TRUCKS DIVISION.

S-3—Automatic Sequence Control—Data Sheet EEb, 4 pages, details operation, application and construction of a new, compact automatic sequence control for pneumatic materials handling systems, with typical schematic diagram. — THE ALLEN-SHERMAN-HOFF COMPANY.

S-4—General Purpose Trucks—Catalog T-60 describes two-wheel hand trucks and platform — a full line manufactured in Rome, Ga., to cover material handling needs. — THE FAIRBANKS COMPANY.

S-5—Mechanized Handling—Bulletins L. T. 161 and U. A. L. 161 cover two recent materials handling installations, and explain operation of conveyor systems. — MATHEWS CONVEYOR COMPANY.

S-6—Overhead Handling Equipment—Catalog, 8 pages, includes all basic overhead handling equipment used in 90 per cent of all Monorail installations, with illustrations. — THE AMERICAN MONORAIL COMPANY.

S-7—Cranes & Hoists — Bulletin gives right combinations of capacity, clearance, speed, controls and components to handle each job best with Job-Mated cranes and hoists, designed for faster and more efficient production and to increase usable storage space. — SHEPARD NILES CRANE AND HOIST CORP.

S-8—Sectional Belt Conveyor—Bulletin 458 describes pre-engineered units for materials handling and presents cutaway photographs showing principal components. — STEPHENS-ADAMSON MFG. CO.

S-9—Lift Trucks — Catalog BU-666, 16 pages, complete with photographs, covers design, engineering construction, and operation of lift trucks, their components, and their power plants.—ALLIS-CHALMERS MANUFACTURING CO.

S-10—Dial Scales — Catalog gives specifications on dozens of standard and special types of industrial scales, accessories for printed weight records, and remote weight indications.—THE HOWE SCALE CO.

S-11—Crane & Hoist Electrification—Bulletins available on 60 amp systems (90 amp intermittent service); 100 amp systems (150 amp intermittent service); and heavy duty systems of 225, 375 and 500 amp. — FEEDRAIL CORPORATION.

S-12—Disposal System — Bulletin CH-5-3554-57, 4 pages, offers a new service to help cut waste and rubbish disposal costs by means of the Dempster-Dumpmaster, which provides enclosed temporary storage in clean, big-capacity containers. — DEMPSTER BROS. INC.

S-13—Vertical Transportation—Catalog A-382 describes and illustrates details of freight and passenger elevators and escalators, for use in all types of industrial plants. — OTIS ELEVATOR COMPANY.

S-14—Crane Systems—Booklet 2008, profusely illustrated, shows how Tramrail transfer cranes can systemetize handling. Includes engineering and application data. — CLEVELAND TRAMRAIL DIVISION.

S-15—Belt Conveyors—Cat. ID-591, 88 pages, shows principal belt conveyor products, including heavy duty standard roller bearing and precision ball bearing idlers. Engineering data section contains simplified information for proper selection. — CONTINENTAL CONVEYOR & EQUIPMENT CO.

S-16—Powder Pumps—Bulletin No. 110, 8 pages, explains how Moyno powder pumps offer a new method of conveying dry materials using product-to-air ratios as high as 200:1 by weight. — MOYNO PUMP DIVISION, Robbins & Myers, Inc.

S-17—Coil Chain Hoists—"Quik Lift" Bulletin, 12 pages, tabulates features and specifications of new coil chain electric hoists with push-button control, available in capacities from ¼ to 2 tons.—COFFING HOIST DIVISION, Duff-Norton Co.

S-18—Bin Level Switches—Bulletin 159 on "Tellevel" describes normal duty, explosion-proof and heavy duty units. — STEPHENS-ADAMSON MFG. CO.

S-19—Pressurized Bulk Truck—Advance Specification Sheet No. 213, 2 pages, introduces the pressurized bulk truck for handling granular products or fine powders without contamination from one load to another and with no moisture pick-up. —SPROUT, WALDRON & CO., INC.

S-20—Wire Rope—Bulletin 60100R, 4 pages, explains a new concept in wire rope design called "7-Flex,"

made of 7 strands plus an independent wire rope core. Chart shows diameter, weight per foot, and breaking strength. — MACWHYTE COMPANY.

S-21—Vibrating Feeders — Folder 2770, 6 pages, covers Straightline vibrating feeders with Synchromatic vibrator, incorporating a new principle for high-capacity, controlled feeding of heavy and highly abrasive bulk materials.—LINK-BELT COMPANY.

S-22—Cutting Handling Cost—Bulletin 5025, 80 pages, is a "Handbook of Cost Cutting Materials Handling Ideas." Tells how to analyze materials handling problems and methods, with case histories on truck applications. — AUTOMATIC TRANSPORTATION COMPANY.

S-23—Side-Loading Trucks — One unit can easily load, stack and transport long, bulky selective loads. Traveloader maneuvers in aisles only 6½ ft. wide; electric and gas powered units; low maintenance features. — BAKER INDUSTRIAL TRUCKS.

S-24—Shielded Electrification—Bulletin KS-1 describes "Kant Shock" shielding for monorail and crane systems, designed to prevent accidental contact with live bus bars, protect employees and reduce insurance rates.—AMERICAN MONORAIL COMPANY.

S-25—Casters & Wheels — Catalog C-57 features "Lockweld" steel casters without king-pins and describes full line of industrial wheels manufactured and distributed from Rome, Ga., plant. — THE FAIRBANKS COMPANY.

S-26—Bin Outlet—Form No. HO-24 30M, 4 pages, describes a new hyperbolic outlet for application to new or old bins handling granular and lump materials, to assure free, fast and uniform gravity flow.—THE BIN-DICATOR COMPANY.

S-27—Magnetic Trap—Bulletin 1910-D, 2 pages, tabulates features of the "Magna-Trap," designed to separate tramp iron and iron of abrasion from products conveyed by pipe lines. — DINGS MAGNETIC SEPARATOR COMPANY.

S-28—Elevator Maintenance — How Otis contract maintenance service keeps equipment operating like new outlined in 24-page catalog. Preventive maintenance corrects one fault before one fault can cause another. — OTIS ELEVATOR COMPANY.

S-29—Revolver Feeders — Bulletin F-9, 2 pages, presents "blow-through" type revolver feeders for feeding dry, pulverized, and granular materials into high pressure pneumatic conveying systems.—FULLER COMPANY.

S-30—Handling Products — Bulletin No. 59-E, 8 pages, illustrates a variety of "Products for Industry" including specialized conveyor systems. Outlines complete engineering services. — KENNEDY VAN SAUN Manufacturing & Engineering Corp.

S-31—Pipe Storage Racks—Bulletin TSA-5, 12 pages, explains how the Tube-Strut clamp, available in standard nominal pipe sizes, eliminates need for special materials or fabrication of storage racks, by use of ordinary pipe. — TUBE-STRUT CORP.

S-32—Sling Chains—Catalog DH-39-B, 8 pages, illustrates the various components that make up a complete Kuplex sling chain. Charts show working load limits for 2-leg, 3-leg, and 4-leg slings at different angles. — AMERICAN CHAIN DIVISION, American Chain & Cable Company.

S-33—Gas-Powered Lift Trucks — "Facts and Factors Booklet," 16 pages, discusses the flexibility of gas power plus the efficiency of electric drive offered in the GLF series lift trucks, with basic specifications for 13 standard models and application photographs. — AUTOMATIC TRANSPORTATION COMPANY.

S-34—Bucket Elevators — Catalog be-55, 84 pages, is a manual designed to simplify the selection and application of bucket elevator systems for bulk handling of coal in industrial boiler plants or wherever coal must be elevated quickly and efficiently.—WEBSTER MANUFACTURING, INC.

S-35—Air-Gravity Conveyor—Bulletin No. 58-K, 4 pages, presents the Air-Float Conveyor for handling portland cement, fly ash, alumina, pulverized chemicals, and similar materials. Explains principle of air-float and describes the special ceramic plate conveying surface. — KENNEDY VAN SAUN Manufacturing & Engineering Corp.

S-36—Feeders & Rotary Valves — Bulletin F-5A, 8 pages, illustrates and describes complete line of roll and vane-type feeders and rotary valves for the handling of dry pulverized and granular materials. — FULLER COMPANY.

S-37—Storage Racks — Bulletin TSRE-4, 24 pages, tells how one type of clamp used with ordinary pipe or tubing will fill every requirement in the construction of a storage rack. Drawings show various types.—TUBE-STRUT CORPORATION.

S-38—Ash Conveyors — Bulletins S57-A and S57 cover pneumatic and hydraulic ash conveyors, respectively. Discuss installation service for high operating efficiency, with wear-resistant pipe and fittings to provide lower maintenance costs. — NATIONAL CONVEYORS COMPANY, INC.

S-39—Vertical Conveyor — Bulletin No. 125, 4 pages, introduces the "Escaveyor," a continuous vertical conveyor for high speed lifting and lowering, and is designed to take less floor space, self-load and self-unload, and cover a wide range of applications. — STANDARD CONVEYOR COMPANY.

S-40—Power Driven Hand Truck — Leaflets, 2 pages each, present data on the "Stair-Cat" power climbing and power lift hand truck. Features are tabulated, and models available are listed.—NEW DESIGN AND DEVELOPMENT CORPORATION.

S-41—Truck Batteries—Bulletin I. B. 101, 2 pages, covers line of batteries for electric industrial trucks — electrical efficiency, voltage characteristics, current density, experience and qualifications. — SURRETTE STORAGE BATTERY CO., INC.

S-42—Overhead Conveyors — Form No. F-211, 4 pages, offers overhead conveying systems to efficiently solve specific materials handling problems. Illustrated with plant photographs and other pertinent data. — RICHARDS-WILCOX MFG. CO.

S-43—Silicon Chargers—Bulletin AR-109/60, 6 pages, catalogues "AutoReg" silicon chargers for full automatic regulated charging of electric industrial truck batteries. Explains operation and gives specifications. — C & D BATTERIES, Division of the Electric Autolite Co.

S-44—Bulk Systems — Bulletin 960, 8 pages, pictures manufacturing plants using the company's systems for handling bulk material, and describes engineering services from consultation to operation, for diversified volume handling.—BULK SYSTEMS, DIVISION OF JERVIS B. WEBB COMPANY.

S-45—Boom Crane—Bulletin No. 99, illustrates and describes the Mobile Power Swing Boom Crane, recently added to the "Krane Kar" line, and featuring 360 degree swing, available in 12,000 lb and 20,000 lb capacities. — SILENT HOIST & CRANE CO.

S-46—Warehouse Racks — Bulletin, 6 pages, tells how "Hi-Line" storage racks are engineered and manufactured to provide storage of any width, depth, height, or weight. Shows diagram and photographs of simplified design. — WAREHOUSE STORAGE SYSTEMS CO.

S-47—Conveyor Systems — Bulletin, 4 pages, outlines custom engineered conveyor systems available for a variety of applications. Photographs show plants using "Towveyors," overhead trolley conveyors, power and free conveyors.—JERVIS B. WEBB COMPANY.

S-48—Bulk Materials Handling — Technical Bulletins describe air conveying systems, material level controls, rotary air locks and accessory equipment. — FLO - TRONICS, INC.

S-49—Aluminum Conveyor — Bulletin 130A, 2 pages, features a versatile aluminum conveyor that can be moved by one man, because of its light weight and portability. Illustrates several models available. — HYTROL CONVEYOR COMPANY, INC.

S-50—Industrial Battery — Bulletin IT-532, 2 pages, presents data on the "Slyver-Clad" electrochemically balanced industrial truck battery. Cutaway photograph shows construction features and advantages.—C & D BATTERIES, Division of the Electric Autolite Co.

S-51—Cleated Belt Conveyor—Bulletin 131A, 2 pages, illustrates and describes the Model C floor-to-floor conveyor with belt cleats furnished as standard equipment, and all-steel construction.—HYTROL CONVEYOR COMPANY, INC.

S-52—Pump Conveying Systems — Advance Specification Sheet No. 229, 2 pages, gives details on pumps for conveying fine powdery materials without dusting problems. Shows general layout of system, and lists materials that can be handled. — SPROUT, WALDRON & COMPANY, INC.

S-53—Drag Chains — Folder 2772, 4 pages, presents selection data for welded steel drag chains for drag conveyors in saw mills, paper mills, and similar heavy-duty applications. —LINK - BELT COMPANY.

S-54—Trolley Busway Electrification —Bulletin No. 85, 44 pages, catalogues 100 amp steel-enclosed trolley busway industrial electrification system; and the 100 amp continuous service, 150 amp intermittent service crane and hoist electrification system. — FEEDRAIL CORPORATION.

S-55—Hoist Specifications — Bulletin HMA-400, 8 pages, gives standard specifications for Electric Chain Hoists. Other booklets in the Series HMA-100, 200, and 300, cover Electric Wire Rope, Hand Chain, and Manually Lever Operated types of hoists.—HOIST MANUFACTURERS ASSOCIATION, INC.

S-56—Conveyors & Elevators—Bulletin 49127, 30 pages, covers the installation, operation and maintenance of chain conveyors and elevators, and allied equipment. Check chart and illustrations are included. — CHAIN BELT COMPANY.

S-57—Heavy-Duty Casters—Circular No. C-25, 2 pages, covers double ball race swivel casters and rigid casters. Specifications for different types are included, and equipment is illustrated. — THE FAIRBANKS COMPANY.

S-58—Monorail Electrification—Bulletin EL 1510, 4 pages, introduces the "Saf-T-Lek" shield electrification for cranes and monorail systems offering a new ball joint assembly and multiple contact collector shoe that is self-aligning and self-cleaning. — CONTROL ENGINEERING COMPANY.

S-59—Safety Kit—Plant safety kit is designed to make fork lift truck operators more efficient and safety conscious in materials handling. Contains Lift Truck Operator's Guide, Posters, and Check List.—TOWMOTOR CORPORATION.

S-60—Battery Electric Trucks—Bulletin, 18 pages, describes major features of construction and operating characteristics of the battery-electric industrial truck. Photographs and text cover a variety of actual plant applications.—ELECTRIC INDUSTRIAL TRUCK & ALLIED PRODUCTS MANUFACTURERS.

S-61—Diesel Powered Equipment — Bulletin L-1126, 12 pages, suggests ways of getting more profitable production with diesel powered crawler-tractors and loaders. Illustrates features and outlines advantages. — THE EIMCO CORPORATION.

S-62—Steel Shelving — Booklet, 16 pages, "12 Losses Penco Planning Can Control," is intended as a reference to help storage system planners pinpoint their objectives and the best ways to achieve them.—PENCO DIVISION, Alan Wood Steel Co.

S-63—Heat-Treating Belt—Brochure, 4 pages, shows cause and cure of "crank-shafted" conveyor belt rod. Three basic links of a good, balanced heat-treating belt are described and illustrated, with data chart for stainless steel alloys, high temperature alloys, and special alloys. — THE FAHRALLOY COMPANY.

S-64—Mechanical Conveyors—Catalog Section, 8 pages, offers complete descriptions and specifications of light, medium and heavy tonnage mechanical conveyors. Includes illustrations.—SYNTRON COMPANY.

S-65—Automatic Belt Cleaning — Bulletin 448, 4 pages, outlines a new belt cleaning system and helps the engineer plan an installation by illustrating equipment installed in a typical processing plant.—SELLERS INJECTOR CORP.

S-66—Ball-Bearing Conveyor Rolls—Bulletin 456-10, 4 pages, describes Series 156 medium-duty ball-bearing belt conveyor rolls. Includes both troughing and return idlers for belts 18 to 36 in. wide. — WEBSTER MANUFACTURING, INC.

S-67—Portable Pneumatic Unloader —Bulletin 126-C, 4 pages, announces the "Portaflow" portable pneumatic unloader designed for unloading "Airslide" bulk cars handling dry, pulverized and granular materials. — SPROUT, WALDRON & COMPANY, INC.

S-68—Bulk Handling & Storing — Bulletins 574 and M-260, 12 pages, are guides to selection of pneumatic conveying equipment and bulk storage tanks. System arrangements are diagrammed and photographs show installations. — THE DAY COMPANY.

S-69—Package Handling Systems — Unibilt Brochure covers full line of package handling conveyors and systems including horizontal, inclined, and portable belt; gravity wheel and roller; table top chain; and many others. — CONVEYOR SPECIALTY CO., INC.

FREE READER SERVICE

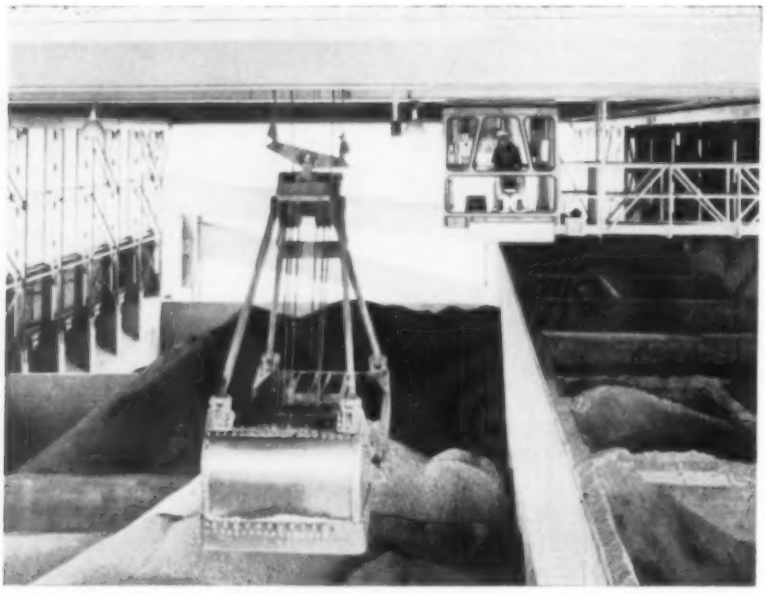
A full-size reader service card is provided for your convenience on page 61. USE IT to order catalogs listed in this section and for other services offered.

The following pages describe new material handling equipment that may help you solve plant problems.

USE THE CARD to get more information on equipment to help you keep your plant operating safely and efficiently.

New Product Briefs Material Handling

For More Information Fill in Code Number Mail Card — Page 61



New Concept in Overhead Cranes

G–1 **Harnischfeger** has announced a new development in overhead traveling cranes, featuring such innovations as improved electronic components and a pressurized "walk-in" passageway.

The cranes are designed to provide the greatest economy in large plants and foundries, where capacity demands are highest and working conditions the most adverse. In these applications, the manufacturer claims that the new system reduces original costs, requires about 75 per cent less maintenance, and substantially increases production capacity.

The interior of the main girder is utilized as a well-lighted corridor in which are located strategic controls and power components, and where maintenance crews can conveniently work. Each aisle or passageway is pressurized similar to the cabin of an air liner.

Capable of coping with high concentrations of abrasive dust, the pressurized walk-in arrangement will be valuable under a wide range of difficult conditions. Among these are steel mills, copper smelters, bulk chemical plants where corrosive or abrasive atmospheres are encountered; dock-side operations where salt water corrosion almost always presents a serious problem; and other conditions where atmosphere interferes with electrical relays, contactors, and other sensitive components.

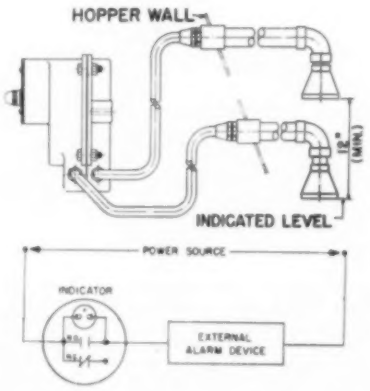
Level Alarm

G–2 **Aerotec Industries, Inc.,** Industrial Division, has developed a device that actuates a signal whenever fly-ash or other finely divided dry material reaches a pre-determined level. It uses no moving parts in the hopper, and thereby eliminates wear from abrasive dusts and the difficulties associated with high temperatures.

This device consists of two sensing cones or end bells for stationary use within the hopper, and a self-contained actuating unit. The latter, installed outside the hopper, is a simple cast iron assembly that houses the only moving parts: a Micro-Switch and a differential pressure diaphram. The housing also accommodates a pressure sensing line for each side of the diaphram.

The high pressure end bell is installed at the desired material level. The other bell is installed at least one foot above it. When the hopper is empty, both bells and therefore both sides of the switch are at the same pressure as the hopper interior. When so balanced, the switch is in its normal position and no signal actuation occurs.

As the hopper fills to a pre-determined level, collected material closes over the high pressure end bell. The resulting pressure in its line is changed to that of air entering the line through a restricted orifice (1/16" dia) in the bottom of the housing. This pressure differential operates the switch. Thus, the unit actuates the signal.



Heavy-Duty Casters

G–3 **The Fairbanks Company** has added a new heavy duty, 100 per cent hardened, series to its patented line of "Lockweld" steel casters.

Series 25 double ball race swivel casters are available in 5, 6, and 8 in. sizes. Series 35 rigid casters are offered in the same sizes. The king-pin or king-bolt, a major cause of swivel caster failures, has been replaced with a rigid, welded structure. The "Lockweld" construction locks the ball bearing raceways in perfect, permanent alignment for easier swiveling.

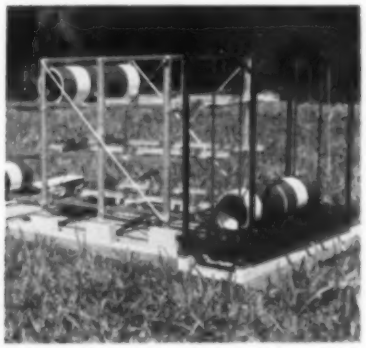
The spherical leg design disperses the load on the caster over a greater portion of the ball race. It adds to the basic strength of the caster and improves the swiveling efficiency under load.

Drum Handling & Storage System

G–4 A new automatic drum handling and storage system, designed and patented by **C. G. Forshey, Materials Handling Engineer,** is now being manufactured. System is applicable to industries receiving, storing and delivering large quantities of 55-gal drums. It saves time, space, manpower; and when lithographed drums are involved, much wear and tear.

Photo of model shows drums held back by special escapements. Flukes on the unit are supplied and hinged with solenoids, since there is "friction going up" which opposes the escapement and lets the drum roll into the unit. Escapement holds back the remaining drums on the rack. Escapement operates at 24 degrees.

In the majority of installations empty drums come in by special conveyors, making left or right turn into the Forshey unit, are stopped electrically, and the drum turned down on its side and positioned ready for the receiving arms.



New Bowman Chain

G–5 **The Jeffrey Manufacturing Company** announces a redesign of the elements in the conventional roller chain to produce a stronger chain, requiring less adjustment and maintenance.

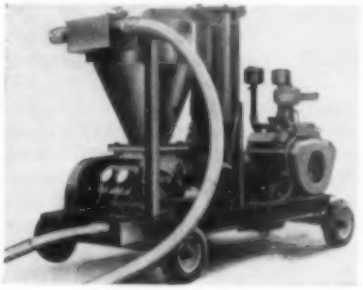
With essentially the same amount of material, but more perfectly distributed, the new Bowman Chain features: 40% fewer wearing surfaces; a reduction of 33-1/3% in wearing parts; 39% greater bearing area and 66% more pin capacity. It can be turned over for extra wear life and is recommended for use on hardened sprockets. Ultimate tensile strength or actual breaking load has been increased about 58%. The chain is available in 2" pitch sizes.

Pneumatic Transfer Unit

G–6 A portable pneumatic transfer unit designed for handling pelletized or granulated plastics has been announced by **Fuller Co.**

The "Airveyor" is constructed of aluminum and completely pre-assembled prior to delivery, ready for operation at the job site. It features a positive pressure, constant displacement blower of high efficiency, which allows the movement of a denser stream of solid matter through smaller ducts. This permits the use of minimum size, easily handled pipe, hose and nozzles, resulting in increased portability.

The Airveyor utilizes a vacuum-pressure principle, in which the vacuum (intake) side picks up the material, and the pressure (discharge side delivers it to the desired destination. A cyclonic receiver on the inside effects the separation of incoming material from the conveying stream. Solids are then re-introduced through a high efficiency, rotary airlock into the conveying air on the discharge side of the blower. Possible damage to the blower from material carry-over is prevented by a second stage separator with filter media.



Slotted Angle for Storage Racks

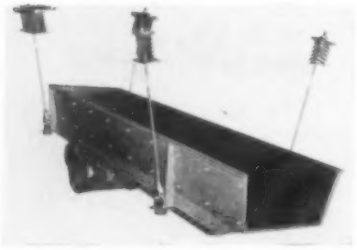
G–7 **Tube - Strut Corp.** announces the introduction of "Angle - Strut," a complete line of slotted angle.

Angle-Strut is available in six sizes ranging from 1¼ x 1¼ x 14 gauge to 3 x 1-7/8 x 12 gauge, 10 feet or 12 feet long. With this wide selection of sizes, it can meet any load requirement, is 100% adjustable and is inexpensive to install. No special tools or skilled labor are needed. Especially designed for pallet racks and heavy duty shelving, for temporary or permanent installations . . . Angle-Strut also serves to make carts,

work benches, jigs, etc., as well as building structures. Accessories such as shelves, cutters, plastic feet and casters are available.

Vibrating Feeder

G–8 **Link-Belt Company** has announced a line of Straightline vibrating feeders incorporating a new principle of vibration. The feeders can be cable-suspended or floor-mounted for controlled feeding of heavy and highly abrasive bulk materials. This new line is available in two models and 30 sizes, with capacities up to 1350 tph.



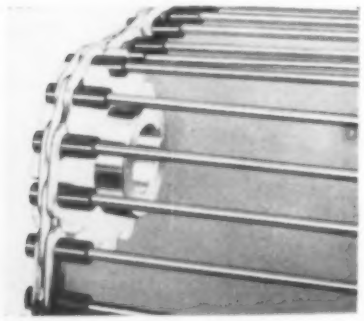
Straightline feeding motion is produced by the vibrator's two unbalanced shafts, driven by individual pancake motors. The shafts rotate in opposite directions and cause the motors to synchronize despite absence of direct coupling between shafts.

Nylon-to-Nylon Belting

G–9 **Velten & Pulver, Inc.** announces that **Linklok Systems** has developed a new rod type, nylon-to-nylon belting backed by a guarantee for five years of normal usage in many conveying systems. Dual nylon sprockets with two equalizing bearing surfaces engage free-turning, nylon tipped rods held in alignment by triple link-to-rod construction.

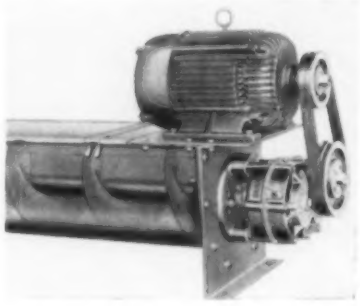
This low-friction belting can be used on runs up to 150 ft with a single drive. No lubrication is required. Operating speeds up to 850 fpm with perfect alignment are said to have been attained.

The belting meets the rigid sanitary specifications required in food processing, and is also used in a variety of other industries. It is available in stainless steel, steel and aluminum in a wide range of coatings to meet individual requirements.



New Drive for Screw Conveyor

G–10 A compact Screw Conveyor Drive especially designed for short conveyor flights and low horsepower requirements is announced by **Dodge Manufacturing Corporation.**



Identified as Series 100, the new drives are offered in two speed ratios: 8:1 for up to 6 hp at 225 rpm, and 18:1 for up to 3.8 hp at 100 rpm.

The unit consists of a double-reduction speed reducer with packing gland and driving shaft which mounts on a trough end. Trough ends are also available.

Bucket Elevator

G–11 **The Bucket Elevator Company** announces the availability of the "Buck-El Lift-It-Kit." The unit is a bucket elevator sold in kit form for on-the-job assembly by one or two men. Construction is of lightweight carbon steel.

The basic kit includes a bottom section with built-in slide gate; two mid-sections; head section with discharge chute; belt (or chain) and buckets; drive components with motor optional, and all necessary hardware. Discharge height is adjustable from 6′ 2″ to 8′ 2″. The elevator will lift a wide range of bulk materials at capacities up to 4 cfm.

Pillar-Mounted Crane

G–12 A new full-revolving, pillar-mounted crane, which features simplicity of design and minimum space requirements, has been introduced by **R. G. LeTourneau, Inc.** The 100,000 lb capacity all-electric unit has a total weight of only 60,000 lb.

The new RD-120 is an addition to the company's line of cranes designed for construction, materials handling and offshore oil drilling platforms. Its low space requirement feature is the result of single column mounting and short tail swing design. The compact configuration is attributed to a new high-strength steel that permits reduced column size, plus special single-point suspension of the swing table that eliminates counter-weights, hook rollers and live roller circle.

Portable Air Filters

G–13 Development of two portable air filters with direct application to a wide variety of vacuum-type pneumatic unloading systems is announced by **Fuller Co.** The intake unit filters air taken into the conveying system itself and the hatch filters air drawn into the bulk carrier during unloading.

Applications are filtering of inlet or make-up air on any vacuum unloading system where sanitation or prevention of product contamination is important. The units have proved in field tests to be efficient in keeping material "kitchen clean."

The conveying air intake filter is designed to attach directly to the car unloading nozzle by means of a slip coupling, while the car vent filter is placed directly on the open car hatch. Both units are of stainless steel and aluminum construction. Filters feature a replaceable cartridge of high efficiency and permeability that can be washed and reused.

Overhead Cranes

G–14 A new line of overhead electric traveling cranes for regular industrial service has been announced by **Manning, Maxwell & Moore, Inc.,** Shaw-Box Crane & Hoist Division. Known as the Shaw-Box Series "D" line of cranes, they are available in capacities ranging from 3 to 25 tons, spans to 80 feet, and come equipped for floor or cab operation, with choice of lifts, speeds and electrical currents.

These cranes are pre-engineered to permit assembly line construction from standardized components, production manufactured in quantity. This method provides an interchangeability of parts and enables the builder to achieve considerable savings in production costs which are passed on to the purchaser.

Maximum use of building or bay area is possible because of compact, low-silhouette trolley design. This permits a crane to be installed extremely close to roof trusses to provide high hook lift and greater utilization of available space beneath the crane. Another advantage is the ability to make very close end approaches of load hook to the building walls.

Coal Mover

G–15 Coal handling is one of the many new jobs that can be efficiently done by the Caterpiller 966 Traxcavator when equipped with a Balderson BD966U-12′ light material handling blade, built by **Balderson Inc.**

The Balderson blade fits on the Travcavator in place of the bucket, using the Traxcavator pins. The whole unit has the appearance of an earth moving machine.

Dust Collection Standard Units

G–16 A standard line of universal hoppers and stands for Dustkop dust collection units is now available from **Aget Manufacturing Co.**

Design of the new units is based on the variety of shapes and sizes of Aget hoppers and stands and will satisfy over 90% of customer installation requirements. In order to eliminate the high cost of custom design and construction these new units include but three sizes of hoppers and two sizes of stands. Any series Dustkop, when ordered without its standard bin, will fit any one of the hoppers and either stand.

Designed for maximum convenience in plant operation and servicing, the larger stand, No. HS-12, provides truck clearance beneath the hopper, while the smaller unit, No. HS-10, provides adequate clearance for either tote truck or wheelbarrow.

All Purpose Hook

G–17 A recent addition to the material handling devices manufactured by **Merrill Brothers** is the "Release-A-Matic" all purpose hook.

A special safety feature makes it possible for the operator to stand clear and eliminates hazards of unhooking live loads, as the hook can be released while loaded. Positive lock prevents opening under any load conditions except when intentionally released by the pull ring. The device combines quick use of the conventional hook with the safe-

ty of a shackle, without pin problems. It is adaptable to practically any type of fitting, it is lightweight, and combines a wide opening with a small girth.

Adjustable Gantry

G–18 **B. E. Wallace Products Corp.** announces the availability of an adjustable gantry that can be set up on the end of loading platforms, as well as on truck beds, in pits and other cramped areas.

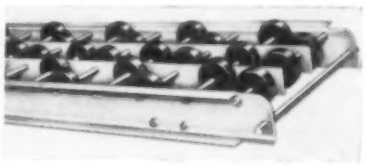
Called "Magic-Pole Universal Gantry," it has telescoping legs with 6 feet of height adjustment, and a self-leveling I-beam for off-center loads. The trolley is free to travel the entire length.

Unlike conventional fixed height gantries, the new unit can be lowered and narrowed when rolling through tight aisles, under fire doors and into elevators. At the job, it can be raised quickly, giving maximum clearance even in areas with minimum head room. The entire unit is weatherproofed, and folds compactly for hauling or storage. Outstanding features include swivel lock casters, spring-loaded bolts, and removable casters and caster frames.

Nylon-Wheel Conveyor

G–19 Newly designed, easily portable wheel conveyors manufactured by **Harry J. Ferguson Company,** feature long-wearing nylon wheels for extra-live, responsive action and fast, free-wheeling transmission of plant loads.

The wheels are mounted on aluminum or steel frames and the lightweight conveyor can be picked up and moved to suit plant needs. Hook



and bar couplings permit installation of these conveyors into existing conveyor lines or they can be interchanged with standard Ferguson wheel or roller conveyors.

The nylon-wheel conveyors can be furnished with any of three types of nylon wheels — nylon with nylon bearings for lightest weight, freedom from corrosion and least noise; nylon with double row steel ball bearings for the livest action; and nylon with stainless steel bearings for similar fast response plus corrosion resistance.

Pneumatic Conveyor Feeder

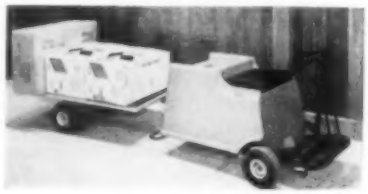
G–20 The Model NF-6-168 pneumatic conveyor feeder has been announced by **National Air Vibrator Co.**

The new feeder measures 16'8" in length, and has a 4" x 24" trough that can move bulk or granular material or assembly parts at capacities of up to 30 tons per hour. The flow rate can be easily changed by adjusting the air pressure range from 20 to 70 psi.

The new feeder is operated by a Navco BH4 air vibrator that incorporates a patented one-piece design and has the silent type vibrator piston as the only moving part. Since the new feeder uses no bearings or electrical control adapters, the manufacturer claims it is practically maintenance free and requires no expensive stock of spare parts.

Electric Car

G–21 A compact electric car specifically designed for industrial service is now available from **Namisco, Inc.** The 182-pound car is 30 in. wide. It will



haul the operator, and has an integral carrying space for loads up to 100 pounds or an additional passenger. It can be operated in conjunction with a trailer that will haul loads up to 250 pounds. It is adapted for use by plant supervisors, process engineers, maintenance men, and other personnel.

Automatic Taper

G–22 **Lathrop-Paulson Company** has announced a new concept in load taping. The new low cost automatic taper can easily be integrated with pallet loading systems, both automatic and manual.

The unit is adjustable for various size loads and for many types of containers. Load capacity range is 40" to 54" long, 34" to 48" wide, and 28" to 72" high. Other models can be engineered to suit any load sizes and cartons required.

SOUTHERN POWER & INDUSTRY
a W.R.C. Smith Publication
1760 Peachtree Rd., N.W., Atlanta 9, Georgia

MANAGEMENT CLINIC

Conducted by ROBERT H. EMERICK, North Charleston, S. C.

Three Man Board or Single Arbitrator?

Question . . . . . .

WHEN INCORPORATING an agreement to arbitrate in a Labor-Management Contract, which is the more effective arrangement of arbitration personnel, a three man board to hear the case, or a single arbitrator?

Suggestion . . . . . .

IN OUR OPINION, an agreement to present the problem to a single qualified arbitrator is both a more efficient and more satisfactory procedure, than is the use of a Board. Here are the supports for this opinion:

Generally, but not always, the Company and Union representatives who meet as common members of a tripartite board, already have wrestled unsuccessfully to solve the problem, and may be expected to maintain their respective positions rather stubbornly. In other words, each is there to do what he can to win an award for his constituents, a position each is more or less obligated to take in support of the people he represents.

This leaves the decision in the hands of the Impartial Chairman, but under the usual Contract that requires a decision to be concurred in by two of the three members before it becomes binding, the Chairman on occasion has found himself standing alone, both sides disagreeing. In this situation, the entire arbitration proceeding may end in failure, with a loss of time and expense to all concerned, or the Chairman may modify his stand on the conclusion that such modification is less hurtful than is complete failure.

To avoid such situations, the wording of the arbitration clause in the Contract should designate both the Company and Union members of the Board as responsible for choosing the Impartial Chairman, and thereafter to act in advisory capacities to the Chairman, but without any authority to nullify his decisions.

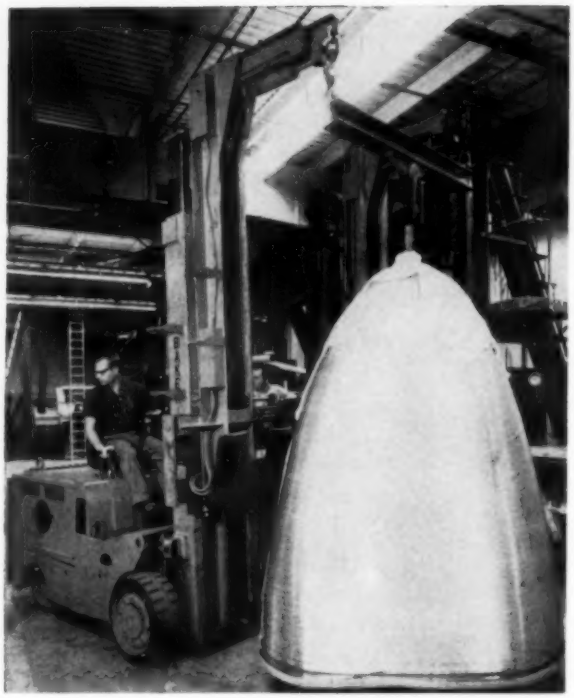
Choosing a Board for the arbitration procedure also adds to the costs of the procedure in terms of time lost from the Board members' regular employment. This loss is borne by the Company solely, since the Union representative, as well as the Company man, is on the Company payroll and must be paid his full time under most Contracts while engaged in grievance activities.

Another disadvantage of the Board appears in time delays after the hearing is concluded. After the Impartial Chairman has prepared his opinion and award, the papers must be sent to the other Board members for their signatures, whether concurring or dissenting, then returned to the Chairman for whatever further action is necessary, and finally, mailing to the Parties.

By contrast, the single Arbitrator eliminates the stalemates and delays described, and saves the losing member of a Board from the criticism of his constituents.

Precision Handling in Manufacture of Nose Cones

Virginia Plant Makes Good Use of Two Special Features



"Teamed" electric trucks, linked with a coupling device, are used to transport a 13,000 pound aircraft radome. The two trucks are shown carrying the piece from a winding machine.

THE MANUFACTURE of highly delicate fiberglass nose cones and radomes for missiles and aircraft at the Brunswick Corporation's Marion, Va. plant present some complex handling problems.

Finished parts must be held to close tolerances. The slightest dent or bend or deviation in wall thickness can cause the rejection of a very expensive radome. Consequently during the manufacturing process these parts must be transported with extreme care to the eight or more manufacturing stations. Movements are further complicated by the great weight of the mandrels (300 to 13,000 pounds) on which the filament - wound fiberglass parts are formed.

An overhead monorail crane would not have the flexibility which the engineers deemed necessary for this work, and installation costs would have been too high. Therefore, Brunswick solved the problem with two Baker electric lift trucks especially equipped with remote controls and adapted so they can be employed to work as a team, side by side, in the handling of the heavier mandrels.

"Our initial cost savings on the two trucks are estimated at 50 per cent of what would have been spent for an overhead monorail system," reports Horace Huff, project engineer in charge of radome and nose cone manufacture. "And we are able to handle these highly delicate parts with all the precision and gentleness they demand. When necessary, our trucks can be routed around temporary obstructions, and they can also be used in the conventional manner, as standard fork lifts, in other parts of the plant."

Chief problem in the transporting of the radomes and mandrels between stations is the prevention of damage caused by impact. Mr. Huff explained that the great weight of the mandrels and the extremely close tolerances to which the nose cones and radomes must be held necessitate the use of handling equipment with great accuracy and precision, immediately sensitive to the slightest touch on the controls.

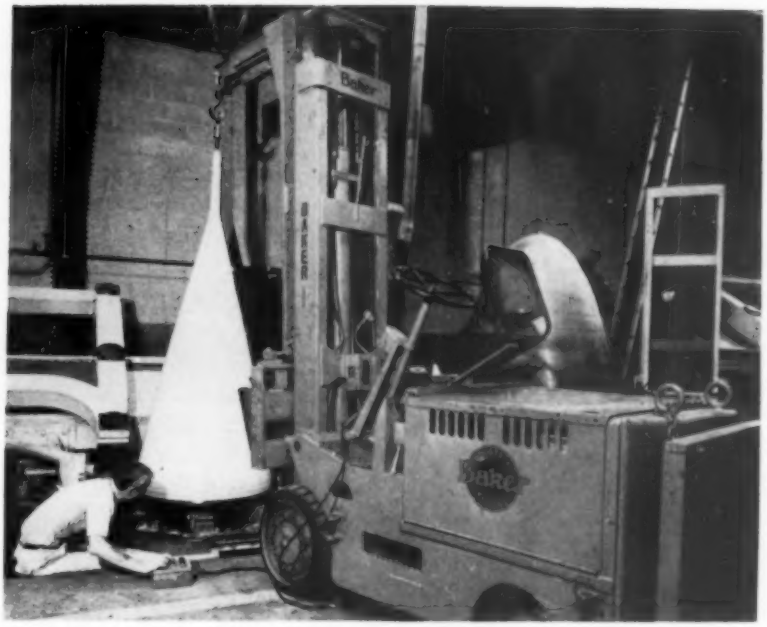
Since the mandrels tend to develop a pendulum motion while being moved, the slightest impact with machinery or equipment can cause a serious dent or bend that will ruin the part. Damage of even a slight impact is invariably ruinous because the entire weight of the mandrel and velocity at which it is swinging is concentrated in the small area of impact.

Exact Positioning

An additional manufacturing problem is the placement of mandrels in the rotary tables of the precision grinders — positioning which demands absolute accuracy.

"Conventional driver's-seat controls would never provide the accuracy we need," Mr. Huff said. "Even with a helper watching the mandrel and directing the operator, there would be an inevitable time lag in addition to the need for an extra man, plus the possibility of confusion between direction and response, and the consequent ruinous damage to radome, mandrel, grinder or any combination of the three."

To solve this problem, the two Baker trucks are equipped with detachable remote control boxes, which permit the driver to operate



Using remote controls, the truck operator can control assembly on the grinding table within thousandths of an inch. This would be impossible with driver's seat controls. Counterweights allow heavier parts to be handled.

the truck while dismounted (see photo). Using the remote controls, he can position himself within inches of the exact point where the part is to be placed and control all movements of the part within thousandths of an inch by fingertip touch on a control button.

Here Are the Steps

Briefly, here are the steps in the manufacture of nose cones and radomes as described by the project engineer.

First, a truck picks up a bare iron mandrel from the part removal area and carries it a distance of from 100 to 200 feet through narrow aisles to a grinder where the mandrel is "read out" with micrometric indicator gauges to establish a basis for measuring the precise part thickness required.

After the mandrel has been read out, the truck carries it approximately 150 feet from the grinder to the winding machine where the first layer of filament-wound fiberglass is applied. The positioning of the mandrel on the winding machine is a critical operation which requires the use of the remote controls to assure positioning within extremely close tolerances.

The next move is to the curing oven (a distance of about 200 feet) where the partly built-up element, still on the mandrel, is cured at high temperature.

When the hardening process has been completed, the part with its mandrel is carried to a grinder approximately 200 feet from the oven where it is given a preliminary smoothing. Next, the assembly is carried back to the winding area (a distance of 150 feet) for the final thickness build-up.

Following the final winding, the part and mandrel are taken to the curing oven for final hardening.

When the curing is complete, the assembly goes back to the grinders and the part is finish-ground to specified wall thickness tolerance. After the finish grinding, which is done in rigid conformity to customer specifications, the part is ready to be removed from the mandrel, tested and delivered.

The truck moves the assembly to the separating stand where hydraulic pressure is used to jack the part off its mandrel. The mandrel is ready to go through the whole cycle again while the radome is sent on for final exterior covering and testing for "boresight" aiming of radar impulses on Brunswick's own test range.

Two-Track Team

To move the larger mandrels weighing up to 13,000 pounds, Brunswick developed a unique system in which the two Baker trucks are used as a team working side by side. The trucks are joined by a coupling device which includes a geometric bar so that they work in perfect unison. Two of the most highly skilled drivers operate the trucks when they are so linked. The average under-load speed is about 10 feet per minute which allows time for the careful maneuvering required. Actually, faster speeds are possible, Mr. Huff said, but the mandrels tend to develop excessive pendulum action at higher speeds.

Operating and maintenance costs of the two Baker trucks have stayed at a very successful level, according to Mr. Huff.

"Both units together operate an average of about 12 hours per day or 60 hours per normal work week of five days. On this basis, we estimate that the two units have amassed a total of 4,500 hours to date, since one has been in service for two years, and the other for one year, at an average of 3,000 hours yearly for both units combined.

"Based on this heavy operating schedule," Mr. Huff said, "maintenance costs for the two trucks have been extremely low. A set of batteries will give anywhere from 24 to 48 hours service between chargings, depending on loads, distances, etc. Downtime has been quite low with only minor repairs necessary in most cases. Routine lubrication and battery charging ordinarily keeps them running in perfect order."

The coal handling system at the Dickerson Station starts at the rotary car dumper shown at right. Coal is reclaimed from twin track hoppers by belt feeders and conveyed to the crusher house. Crushed coal is then directed either to storage through a stationary stacker or directly to the plant.

Coal Handling on the Potomac

GREATER USE of air conditioners and electrical appliances of all kinds has swelled annual residential consumption of electricity in the Nation's Capital. There was an increase of 46 per cent in the kilowatt hours used in the past five years.

Potomac Electric Power Company, which serves the greater Washington area, has added 580,000 kilowatts of power since 1955, investing more than $195 million in its expansion program.

Prime project in the expansion program has been the Dickerson Generating Station, constructed on the Potomac River some 40 miles upstream from Washington.

The initial development of this station was engineered jointly by PEPCo and Stone & Webster, at an approximate cost of $62 million. The Dickerson Station was the most efficient in the country in 1959, with a net heat rate of 9007 Btu.

A Link-Belt rotary railroad car dumper designed to unload one coal car every three minutes was installed, and a Link-Belt coal handling system carries the coal at the rate of 750 tons an hour from the dumper to a breaker house, and either to an outdoor storage pile or directly to bunkers in the station. It is then fed to pulverizers that grind it so that approximately 80 per cent passes through a 200-mesh screen before it is blown into the boilers.

This car dumper consists of a 58-ft long transfer table arranged to handle standard gauge open hopper - bottom and gondola - type railroad cars up to 90-ton capacity with a gross weight, including car, of about 258,000 lb. The dumping cycle, not including time for spotting and removing cars, is less than 60 seconds.

Ring centers of the dumper are 54 ft and permit free discharge of coal unobstructed by roller rings, trunnion rollers or their supports. The side frame has supporting timbers against which the car rests while being dumped. These support the car on its side, thus preventing damage to the car.

The dumper has two sets of completely automatic gravity-operated clamps, utilizing pivoted counterweights carried on the dumper cradle. Each set of clamps is provided with its own holding medium, completely independent of the other.

The car dumping cycle takes just 60 seconds to unload the car, not including time for spotting and shunting.

Operation of Dumper

The car dumper, operated by means of a master control switch, rotates through 37 degrees at half speed, during which time the gravity-operated transfer table moves toward the side support and the top clamps descend simultaneously. After rotating about 7 degrees, the car reaches its side support and the top clamps continue to lower to the top of the car.

When the dumper has rotated 37 degrees, a limit switch automati-

cally trips the dumper to full speed, and rotation continues until the motor is automatically stopped by a limit switch at the end of the forward rotating movement. The contents of the car are discharged before the limit switch is reached.

The operator moves the switch handle to reverse position, and reverse operation takes place automatically at full speed until the dumper is within 37 degrees of the starting position, at which time speed is reduced to half. During the remaining 37 degrees of rotation, clamps are raised and the transfer table and car move away from the side support. When the track limit switch is tripped, rotation ceases and the dumper is held in position with rails in correct alignment by electrically operated brakes.

Electronic Scale

The car dumper transfer table is furinshed with an electronic scale system for 300,000-lb capacity. The loaded cars can be weighed as they are placed in dumping position merely by pressing a button. The empty weight can also be taken after the car has been unloaded, before it is moved off the dumper. The scale is operated by the dumper operator and does not interfere with the dumping cycle. It does not require balancing each time a weight is recorded.

Crushed coal can be directed either to the bunkers in the power plant or to the stacking-out stationary boom conveyor shown in the foreground. The crusher house is at left of center, and the reclaim conveyor and the conveyor from crusher house to the plant are at left.

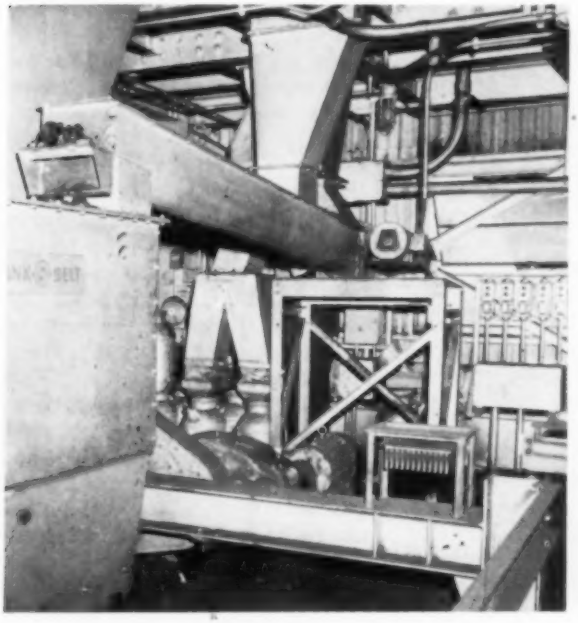
Coal Handling

The coal handling system provides for withdrawal of coal from a twin track hopper beneath the rotary car dumper by two 54-in. wide belt feeders, each operating on 12-ft horizontal centers. The feeders can operate at 40 or 80 fpm, handling 375 to 750 tph of coal. They discharge onto a 48-in. wide inclined belt conveyor leading to the crusher house. The conveyor is inclined at 16½ degrees.

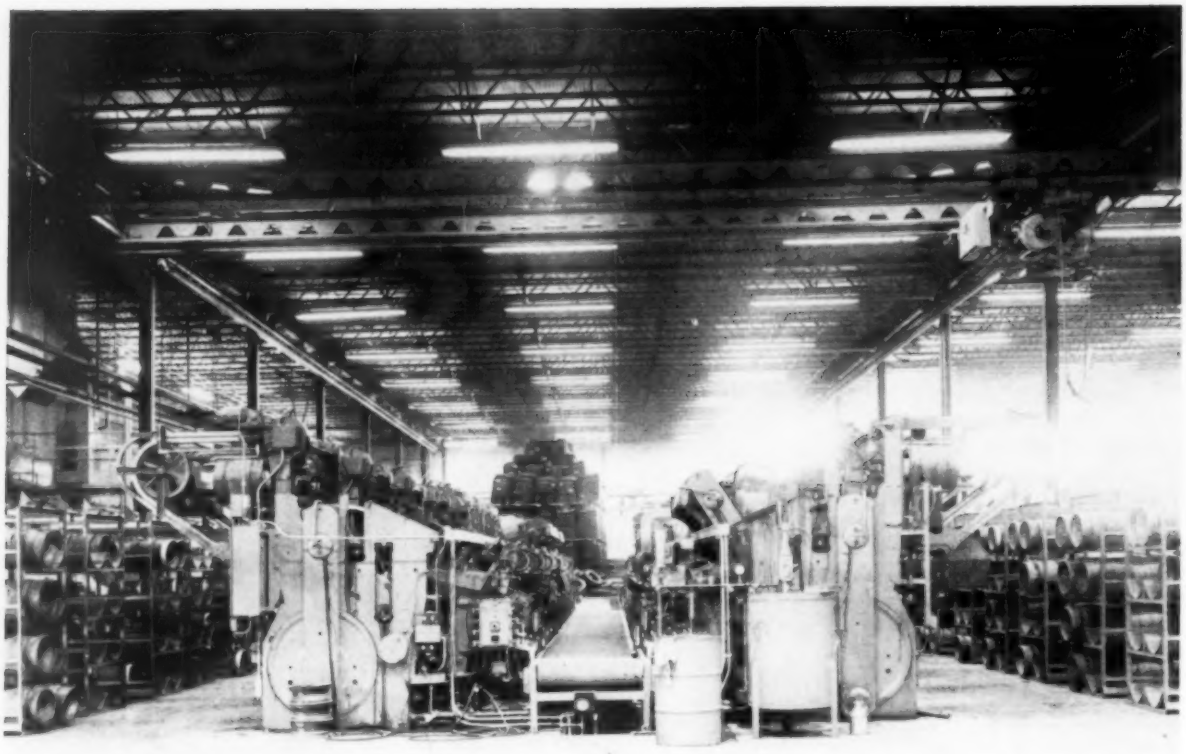
At the crusher house the coal is reduced in size to minus 1½ in. in a breaker which has a hammermill rotor at the discharge end for final reduction of any oversize pieces. A three-stage sampling system in the crusher house and a two-stage sampler in the bunker room obtain samples from the coal conveyors. Provision is made for removal of tramp iron from the coal before it

(Continued on page 36)

Sampling system in the crusher house includes primary sampler, surge hopper with screw feeder and automatic crusher-sampler.



The motor-propelled, automatic traveling tripper operates on T-rail tracks. It is controlled from a panel on the tripper.



Press end of department, showing "green" tire storage racks in front of each line of presses. The crane carrier is seen at upper right.

Automatic Handling and Continuous Operation in a Mississippi Tire Manufacturing Plant

A SPECIALLY DESIGNED material handling system is an important element in the excellent production record of a new Mississippi tire plant. A 50 ft crane operating on 222 ft runways handles racks of green tires from the storage area to curing presses and returns empty racks back to the storage area for reloading — all unattended. By using this automatic handling system only one man is needed to operate a bank of tire curing presses. One other man reloads empty racks in the storage area.

Pennsylvania Tire & Rubber Company of Mississippi, Inc., wholly-owned subsidiary of The Mansfield Tire & Rubber Company, Mansfield, Ohio, is located at Tupelo, Mississippi. It is a new plant which started operation in February 1960, with initial production of 2,000 tires per day, and since expanded, it is rated as the most efficient tire producing plant in the South.

Continuous Operation

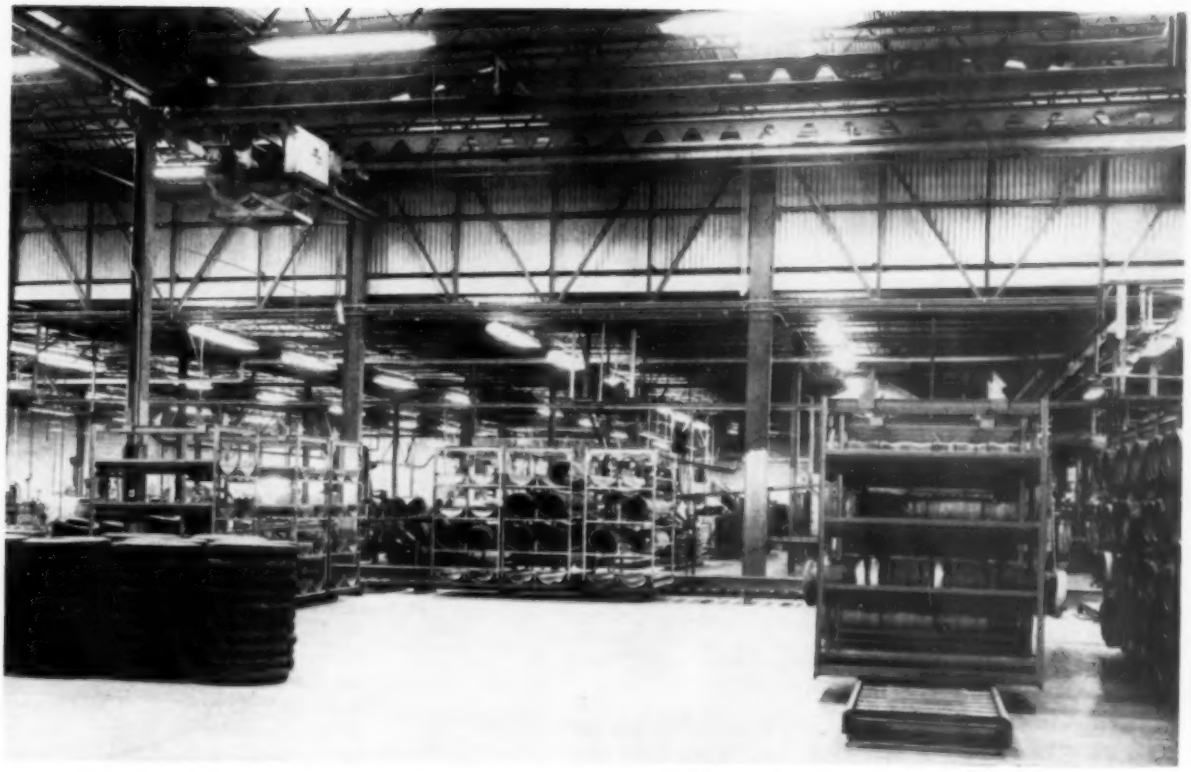
A major initial design problem was how to supply one curing press with green tires without disturbing the continuous operation of other presses in the same row.

With the help of Louden Machinery Company engineers this problem was solved through the use of an automatic crane system, which lifts the green tire storage racks to and from the presses with ease. The system employed requires about one-fourth less floor space than the old "train method" employed at some other plants.

Handling Equipment

The Louden equipment consists of two parallel overhead rails 222 ft long, 50 ft apart, with a traveling bridge running between, and an automatic crane that can be controlled from either end of the operation.

The function of the handling equipment is to facilitate movement of green tire storage racks to and from any curing press without interfering with the operations of the other presses. The metal storage racks are equipped with four shelves, each holding two rows of three tires.



Green tire storage end of department. Empty racks are at left, racks being loaded are center, and loaded racks to the right.

The racks are moved as a unit from the storage area to the presses by means of the crane. In the storage area the racks are handled on a track of metal rollers laid out on the floor.

This movement of racks, without interfering with the operation of the presses, would not be possible with floor trucks or the train method, since there would not be sufficient space to maneuver the trucks around the presses without interference.

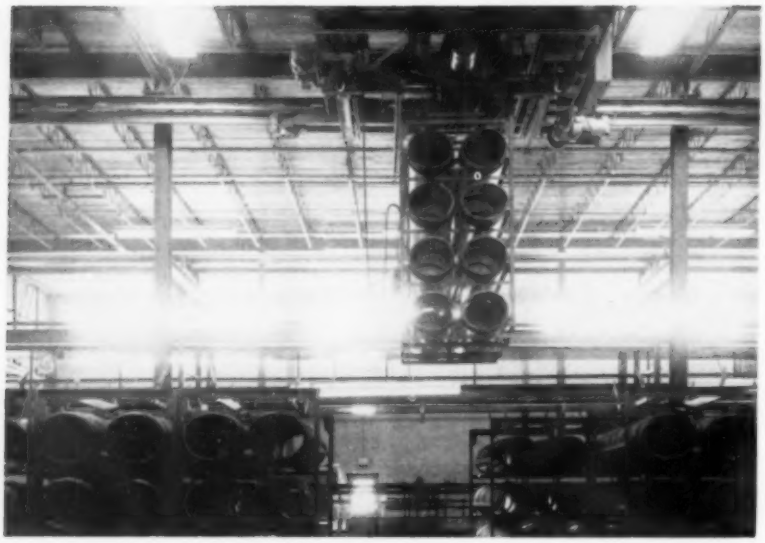
Handling Procedure

Racks are loaded in the storage area from a conveyor that brings the green tires from the tire making room. The racks hold 24 green tires each, and are stored in three rows of eight racks each.

When a rack becomes empty at one of the presses, the operator calls the crane to the empty rack and lowers the crane. He then walks the crane directly over the empty rack and hooks the crane to the rack. He then presses the automatic button and the crane raises the rack, transports it to the green tire storage area and sets it down at the right place in the line of empty racks.

The operator then walks the crane to the proper loaded green tire rack and hooks the crane to the rack. He then pushes the automatic button and the crane raises the full rack and transports it to the automatic press and sets it in

The carrier has completed its run across the crane bridge and is lowering empty rack. Stock man is taking over operation of crane.



The automatic crane with a loaded rack fully raised for transfer to the specific press from which an empty rack was removed.

the position from which the empty rack was removed.

The operator then presses the hold button and the crane returns to the overhead position to await the next call. This round trip operation requires about 4½ minutes and is made on an average of four times an hour.

Automatic Presses

The presses are arranged in a double row back to back with a conveyor belt running between the two rows. The presses are completely automatic, requiring a minimum of attention from the time the green tires are delivered by the automatic dispatcher until they are ejected to a conveyor.

Storage Area

The green tire storage area is in a horseshoe shape with the open end toward the presses. The empty racks are delivered to the left side by the automatic crane. The racks are moved to the closed end of the horseshoe by the crane operator for loading with green tires from a conveyor belt. This belt brings the tires from the tire making department to the storage area.

When a rack is loaded the operator moves the rack to the full storage area which is on the right of the horseshoe as you look from the open end. The rack remains in this area until it is needed to replace an empty rack at one of the presses. When this need arises the loaded rack is moved to the proper press by means of the automatic crane as described above.

The control panel on the crane will move to either end of the hooking device on a track attached to the hooks. This allows the operator to work down either aisle between the storage racks and presses, whether it is to the right or left of the presses.

The green tires, from the time they leave the storage area until they are placed in front of the presses, are handled by one man, with the aid of the Louden automatic crane system.

The same man also operates the two lines of presses. He moves the tires from the storage rack to a loading pan on the press, and from there the press completes the operation. The tires are ejected from the presses to the conveyor belt that runs between the two rows of presses and moves the tires to the tire finishing department.

The automatic handling equipment and automatic presses make it possible for two men to operate an entire bank of curing presses. One man is stationed at the presses and the other in the green tire storage area.

Coal Handling on the Potomac

(Continued from page 33)

enters the sample crusher in the bunker room.

The crusher coal discharges onto a horizontal belt feeder beneath the breaker. This conveyor, about 30-ft centers, has a 54-in. wide belt. It has capacity of 750 tph operating at a speed of 100 fpm and discharges either onto the power plant supply belt conveyor or to a stocking-out stationary boom conveyor.

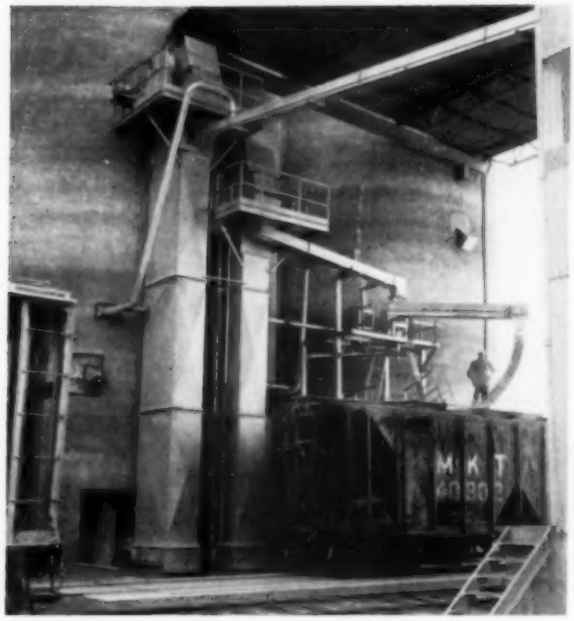
The conveyor runway to the power plant is partly inclined and partly horizontal. This conveyor operates on 527-ft centers with a 48-in. wide belt, and is designed to deliver 750 tph at belt speed of 350 fpm. Coal flow is weighed automatically by a belt scale.

Final distribution of coal into the 2,700-ton capacity overhead bunker is made by a Link-Belt tripper belt conveyor. This belt operates on 218-ft horizontal centers. With completion of the third unit in 1962, this belt will operate on 330-ft horizontal centers, and it is designed for future extension to 738-ft horizontal centers.

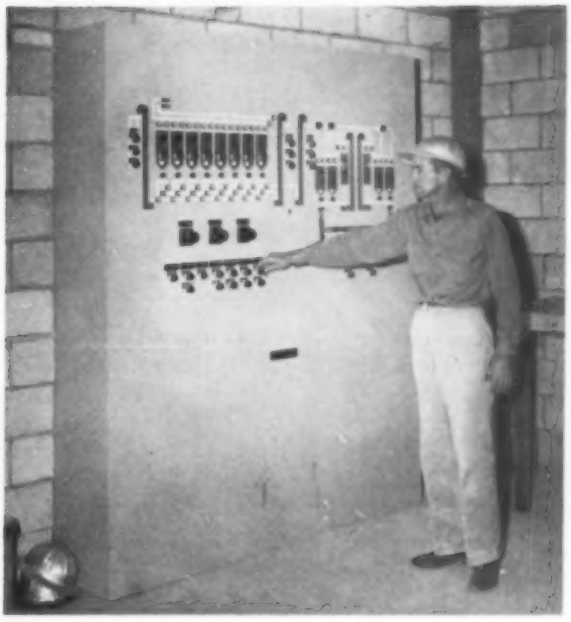
The motor-propelled, automatic traveling tripper, operating on T-rail tracks, handles coal in any of three ways. Coal can flow through either of two discharge chutes into the bunker or through both at the same time. The tripper can be moved back and forth automatically over any one of the bunkers.

Outdoor Stockpile

A stocking-out stationary boom conveyor, 242 ft long and 48 in. wide, is provided for moving crushed coal from the breaker to an initial storage pile. Future expansion will include an additional radial stocking-out boom conveyor that will swivel 180 degrees. Three reclaim hoppers are provided for ultimate use in recovering coal from the stockpile. A belt feeder, 116 ft long and 54-in. wide, delivers the coal to the initial inclined reclaim belt conveyor to the crusher house.



Two continuous bucket elevators, each of 150-tph capacity, are used in handling of finished cement. Elevator at left lifts cement to pneumatic conveyor for deliver to packhouse. Unit at right is used for bulk loading.



One operator has complete control of finished cement from storage silo through the complete bagging process in the unique packhouse of this plant. This assures absolute control of the type of cement shipped on each order.

New Oklahoma Mill Has No Provision for Storing Bagged Product

Bags Moved Direct to Cars and Trucks

MORE THAN 90 per cent of the raw material requirements for Oklahoma Cement Company's new $8 million cement plant are obtained from within 500 yards of the plant. The immense natural reserves at the plant site assure a continuing supply of raw materials for more than 200 years at present production rates.

Clean, efficient design and unusually short supply lines make this plant, about seven miles southeast of Pryor, Okla., an outstanding addition to the cement industry. Yet its construction cost was low in relation to its designed output of one million barrels a year.

The pack house operation is unusual in that there is no provision for storage of bagged cement. However, this is no deterrent to rapid delivery of bagged cement, since the complete bagging operation is automatic and the only personnel other than one operator is the labor required for removing the finished bags from two-way telescoping conveyors for stacking in trucks or railroad cars.

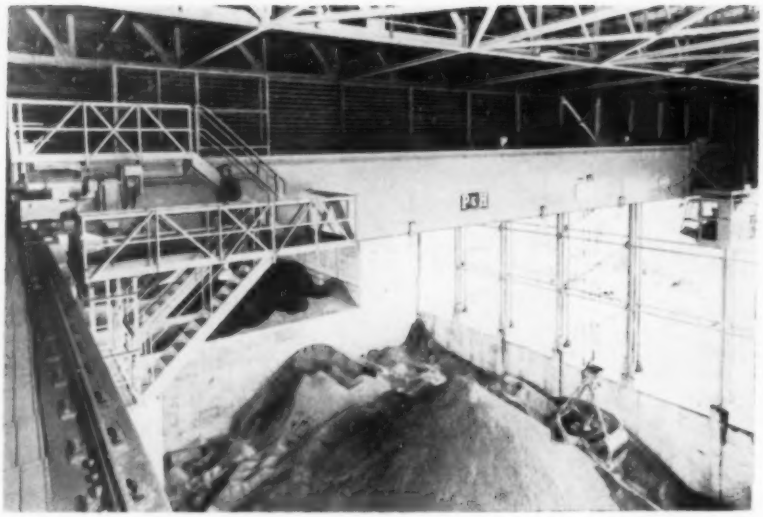
The grinding system is capable of producing somewhat in excess of one million barrels of finished cement annually.

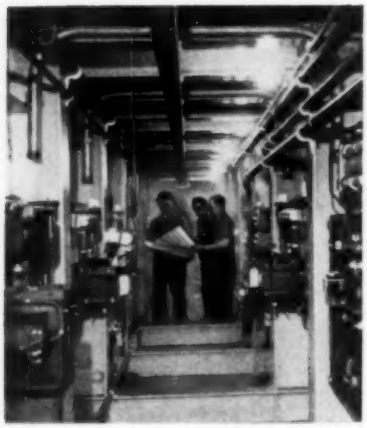
The cement is stored in six concrete silos 33 ft in diameter and 132 ft high and in two interstice silos. Total capacity is 128,000 barrels of finished cement.

Three Link-Belt super-capacity continuous bucket elevators handling finished cement from pneumatic conveyors under the storage silo permit shipments to be made simultaneously in bags and in bulk, in railroad cars and trucks. One unit serves the bulk loading station for rail cars, and another the bulk loading of the big tank trucks. The third elevator lifts cement to one of four 500 - barrel storage tanks above two four-spout bagging machines. These machines are each capable of filling, weighing, closing and discharging to a conveyor system 24 bags a minute.

Two of the new Link - Belt Type 14 centrifugal discharge bucket elevators are employed in the pack house, one serving each bagging machine. These elevators return excess cement to the system.

Link-Belt conveyors and elevators in this plant were furnished by the Link-Belt Houston plant, with considerable equipment furnished as merchandise through Materials Handling Systems, Inc., Tulsa.





Controls are in a pressurized passageway inside the girder.

Two initial walk-in cranes at a large Kansas cement plant are proving to be more economical than conventional cranes of similar requirements, even in original cost and installation.

Control Elements Fully Protected in Cranes Serving Kansas Cement Plant

Walk-In Girders Newest Design Feature

THE FIRST two cranes of a design which incorporates radically new features were recently installed at a large cement plant in Kansas. The plant was designed by MacDonald Engineering Co.

The important new features include a pressurized and well-lighted passageway inside the main girder, running the length of the crane. The area is utilized for electronic controls and power components, greatly reducing costs and increasing safety for maintenance crews. Improved electronic controls also contribute to this new "P&H" crane manufactured by Harnischfeger Corp.

The previously expensive and often dangerous job of high-girder inspection and maintenance is greatly simplified. Crews now can perform practically all their duties in the safety and convenience of the walk-in pasageway. To make this work readily accessible and even more economical, all electrical panels and control equipment are mounted against the interior walls.

Still another ingenious touch is in the form of a small but heavy-capacity electric hoist suspended from an I-beam "track" which runs the full length of the ceiling inside the girder. The traveling hoist is used for easy handling of any heavy equipment inside the girder, or to elevate tools through a dust-proof hatch from the main floor 80 feet below.

Half the economy of the new design is a result of being able to eliminate "auxiliary gingerbread." As an example: It previously was necessary for wheels at each end of crane girders to be propelled from a large centralized electric motor — power to each wheel being provided through long cross-shafts with their necessary multiplicity of couplings and bearings. With the new walk-in design, however, four smaller individual motors can be spotted at the four corners and geared directly to the wheels — thus completely eliminating the long cross-shafts as well as most of the other mechanical linkage.

Probably the most advanced control system ever installed on an overhead traveling crane is incorporated in the two Kansas cement units. However, it also is probably the most simple to operate.

As one example, these cranes represent the first field application of a newly developed bucket-control system — "adjustable voltage d-c electronic stepless control." The clamshell grab-bucket must be opened, lowered into the material, closed, then raised again. By using variations of the "electronic stepless control" (everything except the bucket hoists being a-c powered), all eight motions of the crane and its bucket are governed by only two "joy stick" levers instead of the conventional four.

The most important single feature of the stepless control system for the crane itself is the ability to regulate speed and power to an almost infinite degree. From a production standpoint, the control provides faster operation and permits more exact load positioning.

The operator's cab, attached in

conventional manner beneath the main girder at one end, is provided with an almost "bubble" degree of visibility. The cab has a combination cool-or-heat air conditioner of its own and, like the interior above, is pressurized against dust seepage.

The exceptionally high production requirements of the cement plant present a tough crane duty-cycle. Most overhead cranes are seldom called upon to make more than one or two full-capacity lifts during their routine daily operations — full capacity lifts being the exception rather than the rule. Also the operation of most such cranes is intermittent with at least a percentage of "rest" time. But these first two walk-in cranes, with rated capacities of 15 tons each, are required to make 15-ton lifts (including the 5-ton bucket) on an average of every 53 seconds — straight through two shifts for 16 hours per day. The total amount of material handled is reported to be 540 tons per hour per crane.

Scrap Handling Time Reduced at Atlanta Plant

SELF - DUMPING hoppers enable American Art Metals Company, Atlanta, to dispose of scrap metal in one - half the time formerly required when steel drums were used as scrap containers.

The plant's scrap results from the extrusion, cutting, and forming of aluminum architectural products such as ornamental forms, building entrances, store fronts, and curtain walls.

Scrap consists of billet butts, extrusion trimmings, and both wet and dry saw chips. All of the scrap is collected and remelted with the exception of oil-soaked chips from some sawing operations.

In a move to streamline scrap handling, the company replaced the drums with 12 self-dumping hoppers, of ¾ cubic yards capacity, made by Roura Iron Works, Inc.

The hoppers are mounted on skids designed for fork truck handling. They can be dumped by a fork truck operator without any lifting. Because of their larger capacity, they need emptying less frequently than former containers. The ability to dump loads faster, coupled with the need to make fewer trips, has cut scrap handling time in half, according to E. L. McNiff, Vice-President — Manufacturing.

Hoppers are spotted where scrap generation is heaviest. Billet trimming and extrusion operations, for example, create most of the scrap. In these areas, hoppers have greatly simplified operations.

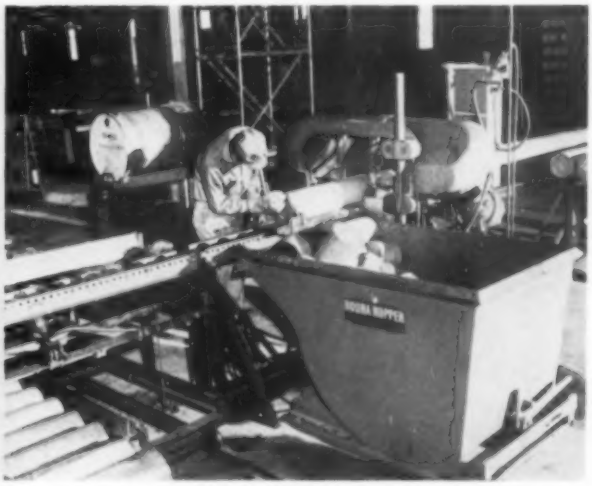
Billets must be cut to different lengths to minimize the amount of scrap remaining after they are fed through the extruding press. Ends of the 8 in. diameter, 16 ft long "logs" are also trimmed to remove metal of non-uniform density.

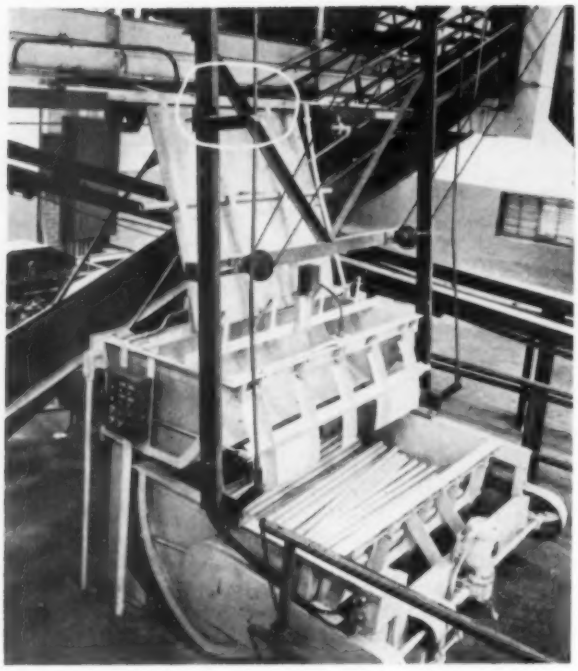
These trimmings and ends are collected in a hopper positioned beside the saw. When a hopper load accumulates, a fork truck takes the load to the furnace for remelting. The fork truck raises the hopper to a furnace charging opening where it is quickly dumped. The fork truck operator simply trips a release handle on the rear of the unit, permitting the hopper to dump and automatically right itself.

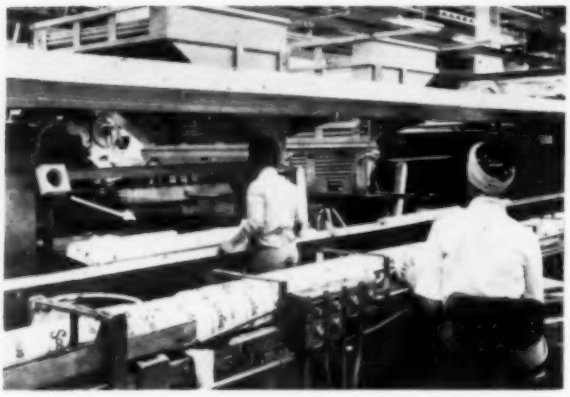
Trimmed billets are fed into two 2,300-ton extrusion presses which produce channels, angles, I-beams, plus other structural and architectural shapes. At the end of each extrusion cycle, a small section of the billet remains and is ejected at a temperature of 850 F. A press attendant picks up the "butts" with tongs and tosses them into a nearby Roura hopper. About two hopper loads are collected each shift and delivered to the furnace.

Chips produced from semi - dry sawing operations are remelted but oil - soaked chips are dumped into disposal bins outside.

Aluminum billets are trimmed by a bandsaw to remove ends of non - uniform density. Scrap end pieces are collected in a self - dumping hopper.







LEFT—Circled area of photo shows tubes being diverted from conveyors into hoppers.

ABOVE—Finished rolls are ejected automatically to a quality inspection station (arrow) by a swinging trough. Following inspection, the rolls are placed on specially designed conveyors for transport to wrapping machines.

Specially Designed Integrated System Handles Paper in Alabama Plant

Three Types of Conveyors

THE MATERIAL handling system at Scott Paper's tissue mill and finishing plant in Mobile, Alabama, is one of the most excellent examples of engineered integrated conveyor systems in industry.

Actually, the integrated handling equipment consists of 3 systems of conveyors — all different types. However, they are all arranged in the production plan so that the operations are integrated in moving material from station to station and eventually to the warehouse.

Tube Handling System

Conveyors in the tube handling system are belted type specially manufactured by Alvey Conveyor Manufacturing Company to handle various diameter, length and weight tubes from core winders to the tube bins.

Roll Handling System

Another system of Alvey conveyors with special features carries rolls of tissue from the continuous tissue winders to the wrappers. There are 10 winders from which this system of conveyor receives and dispatches products to the wrapping stations. Some of the winders are capable of producing 40-80 rolls per minute.

The tissue roll conveyors are engineered to carry unwrapped rolls of tissue from winders to wrappers with tube cores in horizontal position parallel with center line of conveyors.

The conveyors carrying rolls of tissue from wrappers to packers are arranged to accommodate two different methods of packing. Materials wrapped by one group go to automatic hydraulic packing machines. From another group of wrappers, they are conveyed to hand packing stations.

Rolls of tissue that are fed to the automatic packing machines are moved to those stations with tube cores horizontal and parallel with center line of conveyors. And rolls moving to the manual packing stations are turned by special devices and fed to the packing stations with cores in a vertical position.

Inspection stations are located along the route of this conveyor system. At these points, the conveyors are constructed so operators or inspectors have a maximum view of the rolls as they pass.

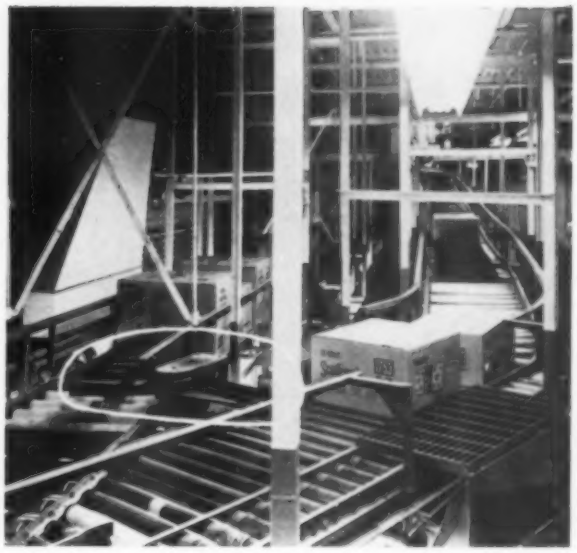
Mechanical arrangements assure that, should a blocking condition occur at any point, little, if any, pressure is exerted by one roll against the other. Thus, uniform roll shape is assured, as they move from winders to wrappers to packing.

Specially designed turntables are located throughout the system to carry rolls around turns 90 degrees or greater.

Case Handling System

Another system of conveyors is used in handling cases of tissue

Conveyor system where cartons from two lines are merged. The "traffic cop" (circled) allows only one line of cartons to pass at a time.



Cartons of Scott products from packing area on incline conveyor system that will carry them to sealing equipment on mezzanine floor.

from the packing stations, through sealing equipment, and on into the warehouse.

This system of conveyors has the potential of handling 18,000 cases of 36 different brands of Scott products every 24 hours.

After cases leave the sealing equipment, they proceed through another section of conveyors arranged so that most of the cases are dumped lengthwise onto a section of gravity roller conveyor.

All size cases continue on this gravity roller section until they reach a case stop device which positions them so they are dumped onto the next section of conveyor on their "width surface."

Warehousing and Shipping

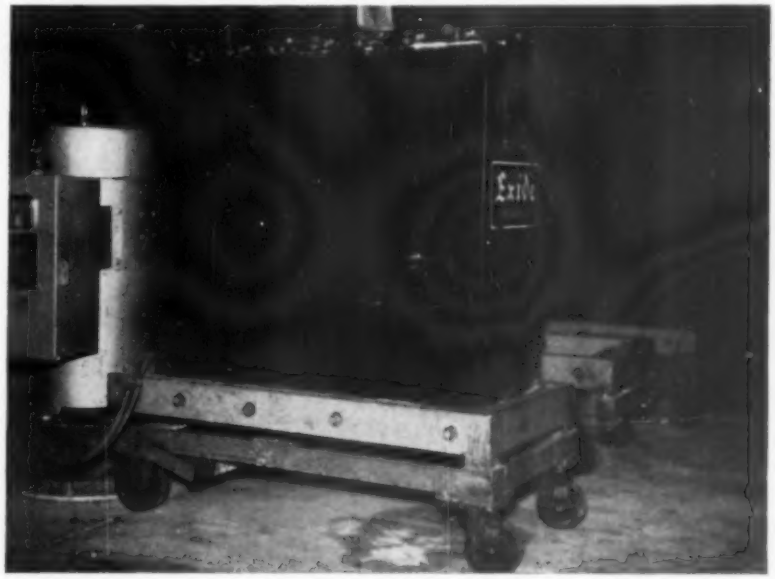
This section of conveyors begins the network of the "live roller conveyor" system that services the warehousing and shipping building which has 40,000 square feet of floor space. The shipping docks can accommodate six 40 foot railroad cars and 6 over - the - road truck trailers. The building is tall enough to allow stacking Scott products up to 16 feet high.

The conveyor system that carries products to this building is arranged so the manpower employed in dispatching cases can conveniently send the materials to either the truck or rail loading docks or into the storage area.

Cart for Batteries

ELECTRIC lift truck batteries weighing over 1,000 lb are most difficult to handle without mechanical assistance. The North Carolina Finishing Company has designed a wheeled cart which allows the operator to remove and install his battery without additional help.

The cart is the same height as the bottom of the battery case on the lift truck. The operator merely disconnects his leads, pushes his cart against the lift truck and slides the battery out onto the cart platform. The cart is then pushed to the battery charger.



ABOVE—This is where garments from branch plants are processed for shipping. Note tote boxes on conveyors.

RIGHT—Orders are filled here for over 8,000 retail outlets. Rollers do the heavy work.

Birmingham, Alabama

Conveyors for Play Clothes

CONVEYOR equipment plays a big part in the scientific layout of the new children's play clothes plant of Simon & Mogilner, Birmingham, Ala. The plant area is 65,000 square feet, and the warehouse is 23,000 square feet additional.

The Birmingham plant serves as a concentration center for several Alabama manufacturing plants, owned by this company, and located at Centreville, Blountsville and Fayette.

As the garments reach the central Birmingham plant they have to be put through a lot of operations before they are ready for the market. These include pressing, tagging, boxing and shipping, and this is where the conveying equipment, furnished by Rapids-Standard Company, is used to good advantage.

The semi-finished garments as received are stored in conveyorized racks awaiting pressing operations. They are withdrawn from these racks and placed at the pressing stations where they are pressed and stacked in a tote box, which is then placed on a conveyor which moves the merchandise to an inspector who examines the work and places it in a flow rack. The purpose of this rack is to allow an accumulation of an entire cutting of one style by size and color so that later it can be boxed.

When an entire "cut" has been assembled in the flow rack, the boxing supervisor selects the correct assortment of tote boxes and places them on a table adjacent to a conveyor. Garments are boxed by the dozen, assorted by size and color, according to the wishes of the customer.

Boxed merchandise is then stored in the warehouse on pallet racks. Merchandise from storage is placed in flow racks at one end and with-

drawn from the opposite end. These racks are conveyorized, and this helps reduce the selection frontage to a short distance.

The tabulating department takes the orders in hand, selects each in the optimum order, prints the correct information on the packing sheet and passes it on to the shipping department. From this numerical listing and from a stock location shown on the packing list, a picker fills the order and releases it to a checker to verify the count. It is then released to packers, then to routing and finally to be strapped and shipped from the warehouse.

This, in brief, is the mechanics of modernizing an operation which for years was done largely by hand. The plant is completely air conditioned, not only for comfort of employees, but to provide ideal temperature and humidity for such operations as pressing, tagging and sealing. The air conditioning also provides the right climatic conditions for the best operation of machines in the IBM room.

Simon & Mogilnor is a 60 - year-old concern which until 1955 operated two plants in Minneapolis, one in St. Paul and one in Buffalo. Then the management decided to move lock, stock and barrel to Alabama, being greatly assisted by the industrial division of the Alabama Power Company. Today the plant has 1,150 employees and production is twice what it was before moving to the South. The firm produces in excess of 10 million garments each year and has an annual payroll of $3,000,000. A staff of 35 salesmen cover all 50 states. All executives of the concern now live in Alabama.

Conveyor in Memphis Plant Streamlines Product Finishing

AN EXCELLENT example of how modern material handling equipment can help streamline product finishing is the system for automatically painting lighting fixtures at the Light & Power Utilities Corporation, Memphis, Tenn.

The Ransburg electrostatic spray process is used here to finish over 500 fluorescent fixtures an hour.

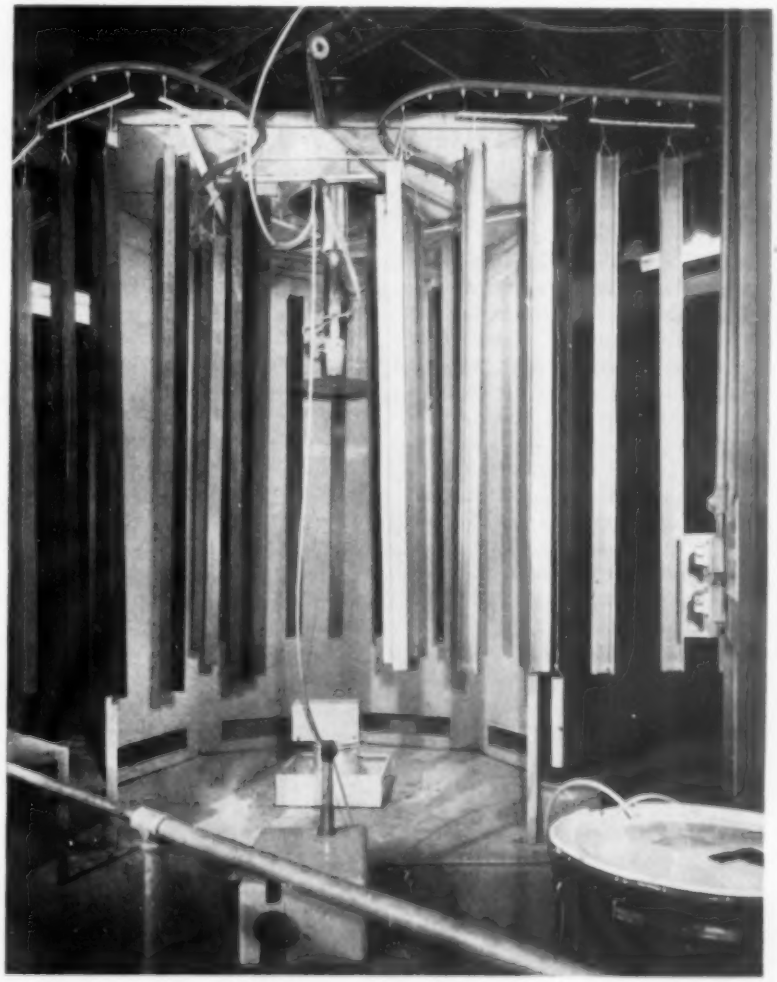
The unusual conveyor, manufactured by the Chainveyor Corporation, is routed almost anywhere to conform with building layout and painting requirements. The conveyor line curves, dips, and makes 180 degree, 16 - inch radius turns as it carries parts through a series of finishing steps.

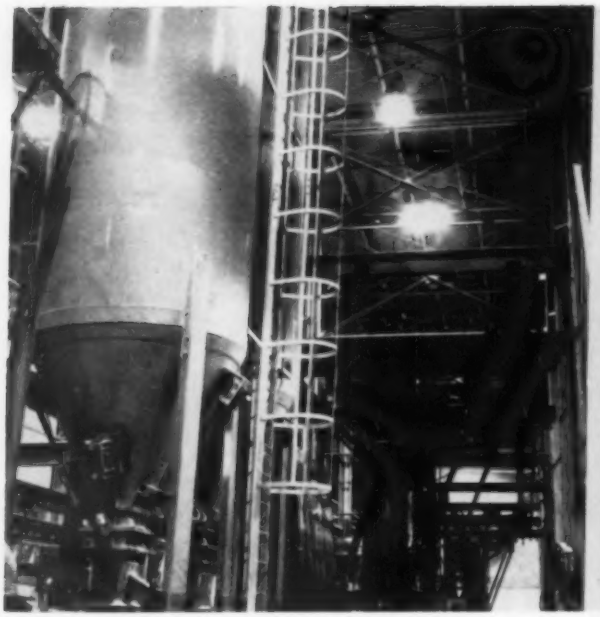
After assembly, steel lighting fixtures are loaded on carriers transported by the 300 foot Chainveyor system. They move first through a degreasing operation, then through a phosphate coating that prevents rust and gives better adhesion to the paint.

Fixtures continue on without interruption to a paint booth where they are given a quality finish by the 100,000 volt electrostatic process. In this unique process, paint is pumped to a rapidly rotating disc which is charged with high d-c voltage. An electrostatic field is thus established between the disc and the part to be painted.

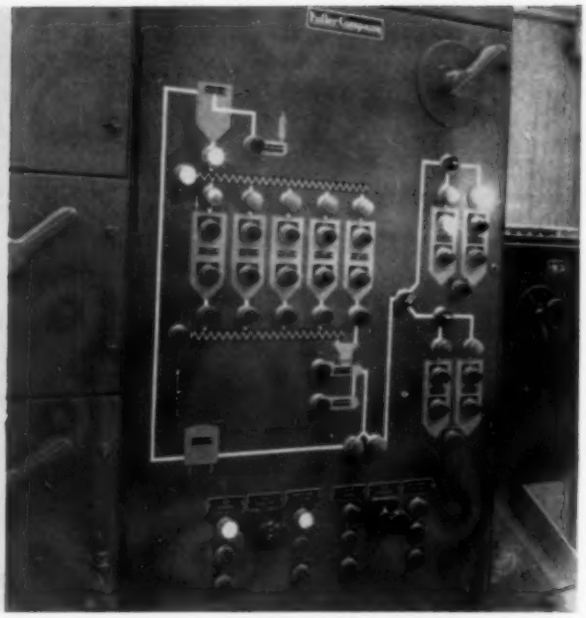
Since the conveyorized loads are electrically grounded, the paint whirling off the disc is attracted as if by a giant magnet.

According to reports, the electrostatic process provides a more uniform and attractive finish with considerably less waste than other painting methods. The conveyor system is also praised by plant management for yielding the triple benfits of production speed-up, reduced operating cost and manpower savings.





DAY - USE BINS (one of the two pairs). Each bin holds up to 18 tons of gypsum. This pair is 661 feet away from the storage bins; the other pair is 972 feet away.



CONTROL PANEL which provides positive control over the flow of gypsum. The operator can send gypsum where it is needed when it is needed — just by pushing a button.

Bulk Handling in Nashville Glass Plant

AT THE NASHVILLE Glass Plant of Ford Motor Company, a pneumatic system is handling up to 30 tons of gypsum a day from cars to storage bins and then to day-use bins. It presents no hydration problems (even during the rainy season), reduces handling costs ($1.25 per ton on bags alone), cuts in-plant accident potential (no dropped bags, no lift truck traffic), wastes no material (no broken bags), and saves money on labor (only one operator needed).

The glass industry uses gypsum mixed with water as an adhesive to bind plates of glass to cast iron tables as they move under a series of grinders and polishers.

The plant produces automotive glass. With 1,160,000 square feet of floor space, and 388,000 more now being added, it is the largest integrated (from raw material to finished product) automotive glass plant in the world.

Thirty tons of gypsum a day would ordinarily mean handling up to 600 bags a day. But the Nashville plant receives its gypsum in bulk.

The bulk handling consists of two operations: An Airveyor system takes the material from railroad cars to the storage bins, and a Fuller-Kinyon system reclaims it from those bins and delivers it to the day-use bins. Both systems were manufactured and installed by Fuller Co.

The first is set up so that it can convey from boxcars, hopper-bottom cars, and General American Airslide cars. A nozzle is attached to a coupling on a car, and gypsum is conveyed pneumatically from it. The gypsum passes through a 5-in. line up to an Airveyor filter, then down to the five storage bins. It is fed into the bins by a rotary airlock and a screw conveyor. Each bin holds up to 65 tons.

When gypsum is needed at a day-use bin, a pneumatic (Fuller-Kinyon) conveying system reclaims it. Each day-use bin holds up to 18 tons. A mechanical conveyor takes it from the storage bins to a compression chamber from which it is discharged through a 5-in. line to each pair of day-use bins.

Airveyor System

The Airveyor system takes gypsum out of box cars at a capacity of 10-11 tons per hour, and out of hopper-bottom cars at a capacity of 13-14 tons per hour. A positive pressure rotary exhauster, driven by a 50 hp, 1200 rpm motor, conveys it up to the filter on the roof. The filter is five feet in diameter, and has four compartments. One compartment is automatically cut out of service every two minutes, and shaker motors agitate the filter bags in that compartment to clean them. Also, air is reversed through the cloth to augment the cleaning action. The action of the filter is automatic, and no compressed air is needed. A rotary airlock and a

(Continued on page 50)

YARWAY news briefs

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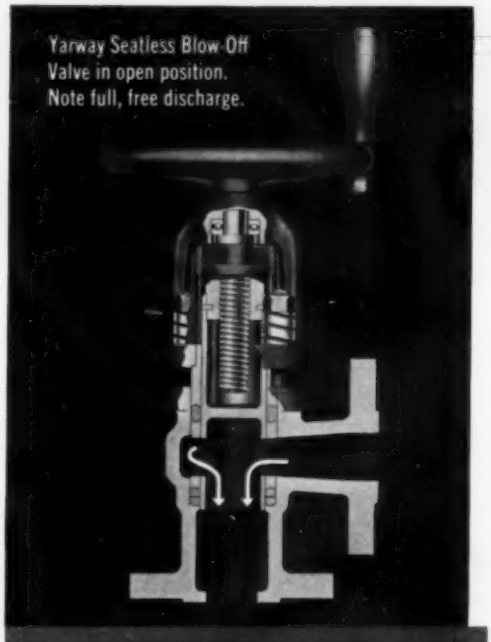
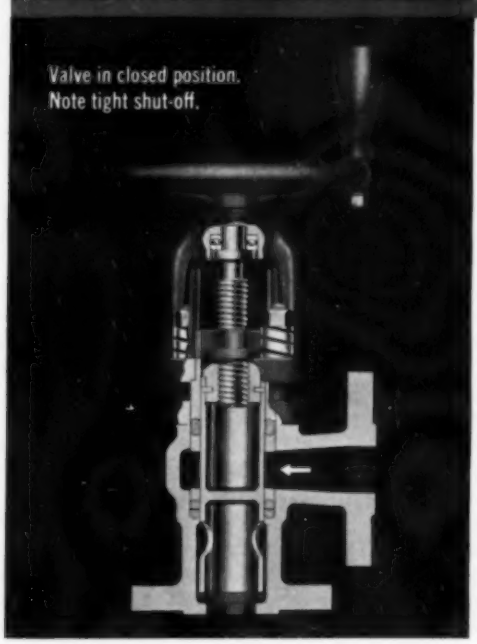


Yarway Seatless Blow-Off
Valve in open position.
Note full, free discharge.



Valve in closed position.
Note tight shut-off.

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The stamping wheels are mounted on springs. They rise and fall to keep in contact with the fruit. If color is added to the fruit, that must be marked. And a producer often adds his trademark.

Profile of a Deep-South Industry . . . . . Citrus Fruit

Handling and Packing

By GUY B. ARTHUR

HANDLING CITRUS fruit is something different. It cannot be shoveled, scraped, tumbled, or bulldozed; it cannot be stored in big piles; it cannot be rolled down long slopes without baffles.

This meticulous care is necessary even for fruit that goes to the concentrate plants. Fresh fruit going to market must have something more; it must be attractive.

The Fresh Fruit Plant of Minute Maid Corporation, at Fairvilla, Florida, presents an interesting materials handling operation. It turns out 30 carloads of oranges or grapefruit a day, or 20 to 25 carloads of tangerines. The plant runs from September to June, with 225 employees at the top of the season. H. F. Berry is manager of the Fresh Fruit Plant, and John Ariko, sales manager, sells the crop.

Some of the equipment, such as washers, is standard on the market, and is purchased. Equipment peculiarly fitted to citrus fruit has been designed chiefly within the plants as the business grew, and some units, like the field-box dumper, were designed by Minute Maid engineers. All of the "outside purchase" equipment is supplied by the Food Machinery Corporation, which has a Florida office in Lakeland. Clark fork lift trucks are used throughout the plant.

Quality is dinned into every department and every employee, and the "soft touch" governs every movement. The first requirement for quality is the careful selection of fruit in the groves, and Minute Maid experts determine just when any grove has reached that point of ripeness and sugar content which calls for picking.

Once off the field trucks, the field boxes are moved by fork lift trucks to a floor-level conveyor in stacks four boxes high. They must be placed there with precision, so they will arrive at the dumping machine square with the machine.

Dumping Machine

This machine solved one of the worst problems in the plant—how to get the fruit out of field boxes without bruising it. When trucks are backed up at the door loaded with field boxes from the groves the unloading must be fast — but safe. At this point in the season

Grading for quality. The fruit moves on roller-bottom conveyors, which turn the fruit to present all surfaces for detecting poor pieces.

Packing into corrugated boxes. The fruit drops through the sizing shafts at proper station, and rolls down padded apron to the packer.

everything must move, for the fruit must be picked just when it is ready, and a bottleneck at the unloading platform could not be tolerated.

Ralph K. Garner, plant superintendent, tackled the problem and stayed with it until he had a machine set up and dumping boxes rapidly and safely. It has been copied widely, but it is still built by fruit plants rather than by outside manufacturers.

Essentially it consists of an inclined elevator at the back, a sloping table in front, and a device for disposing of the empty field boxes.

The operator flips a switch and the floor conveyor moves just enough to tip the first stack of boxes into the inclined elevator. When the boxes lean into the elevator they operate a limit switch which stops the floor conveyor and starts the elevator. When the first box tips over the cylinder at the top it spills its load on the sloping table, and the fruit rolls down a cloth-cushioned surface into a cross conveyor at the bottom.

Automatic equipment is provided for disposing of the empty box, which slides down the table behind the fruit. The empty field boxes are conveyed to a storage pile, for return to the groves.

There is a neat trick here in turning the box so that it heads out to the yard lengthwise. The thrust of the inclined conveyor is sufficient to shove the box more than half its length over a cross-conveyor to hit a curved steel-plate shield on the far side. Overbalanced, the far end of the box drops down onto the cross-conveyor, and the pull of that belt — plus a little help from the curved shield —turns the box at a right angle, so that it now travels lengthwise.

Grading Conveyor

When the fruit rolls from the dumper into a narrow cross-conveyor it is discharged into a wide mechanical grading conveyor. Men standing on each side pick out all leaves, twigs and other trash. Small sizes, used for canning, are deflected to the left into a return conveyor which takes this fruit to bins in the yard. Trucks from canning plants load under these bins.

Larger fruit, suitable for packing, is turned off to the right, into a wide trough at the front of the washer. Entering the washer on an inclined roller-bottom conveyor, it gets its first bath from water jets on its way up the slope.

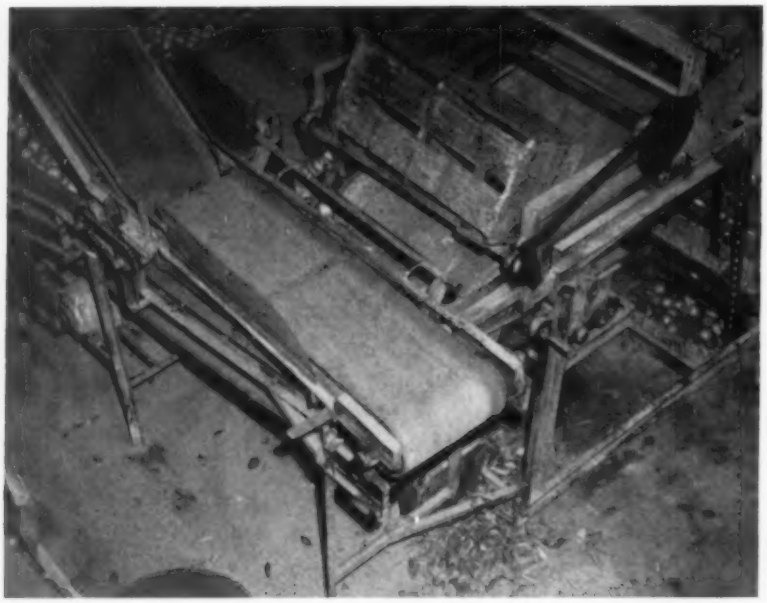
This roller-bottom design for conveyors is one of the most important developments in modern plants. Common equipment would be the flat-bottom canvas belt. A vast improvement was made by making the bottom of the conveyor of 2" steel rollers 4 feet long, spaced far enough apart to make the fruit ride well down in the troughs between rollers.

End pins of the rollers are carried in the links of the drive chains in the usual way, but the journals in the links are elongated vertically to permit some up-and-down motion. Separate pipe tracks are provided under the rollers. Riding on these tracks the rollers are revolved as they moved forward, and thus turn the fruit riding in the troughs.

At a discharge point the side chains are carried in toward the back on a long slant, and then abruptly turned back toward the front over small sprockets which make the flaring front sides of the buckets approach the delivery apron so flat that the fruit rolls out with no impact.

Color Adding

The fruit is washed and scrubbed thoroughly, all sides and surfaces being presented by the turning of the rollers under it. It drains while passing through another con-



The field-box dumper. The emptied box is being lifted on the arms of the driven shaft, and will be set down on the near conveyor.

veyor section, and enters the color-adding machine. Color-adding is governed by law and is permitted only for some fruit, not for all. In the next unit in the train the fruit is dried by forced warm air. Then drying in the open air follows, on the way to the flavor-seal waxer.

All the machines in this train from washing to waxing are standard units, and are purchased from manufacturers. The sequence of passes through such a train is equally common.

Inspecting Conveyors

Now the fruit goes back into specially designed operations, through units which fit nothing else but citrus fruit. It returns across the end of the big room on an elevated conveyor, and empties into two inspecting conveyors of the roller-bottom type. Girls standing alongside inspect the fruit as it rolls past, throwing out all that is not up to standard. This is grading for quality. The rejects are tossed into the conveyor which takes small fruit out to the canners' bins.

Stamping Machines

At their far end these two conveyors rise to discharge onto the wide apron of the stamping machine. This is a standard unit consisting of gangs of stamping wheels under which the fruit passes. These wheels are spring-mounted so they can rise and fall to keep in contact with the contours of the fruit surfaces. Grapefruit, for example, is seldom round, and almost never symmetrical, and the stamping would not be clear unless the stamping wheels could rise and fall.

Stamping is for two purposes. When color is added the fruit must be marked to indicate it. For some packing a producer's trademark is also stamped on the fruit.

Packing

Now the crop is ready for packing, and it goes back across the room, on a higher level, across the ends of the packing tables, to provide a gravity roll to the packing tables.

It has been graded for quality; now it must be graded for size. Four double packing tables, and one single, running at right angles to the bridge and the serving conveyor under it, fill all the middle space in the big room.

These tables are complex in design, making the most of every opportunity for compact, efficient packing. The upper part of each one is, functionally, two troughs. They are V-shaped, with the back side vertical and the other side flaring out and away, toward the packer, at about 45 degrees. They are open through a slit in the bottom. Above each trough, at the vertical, back, side, is one of the pair of sizing shafts which serve the table.

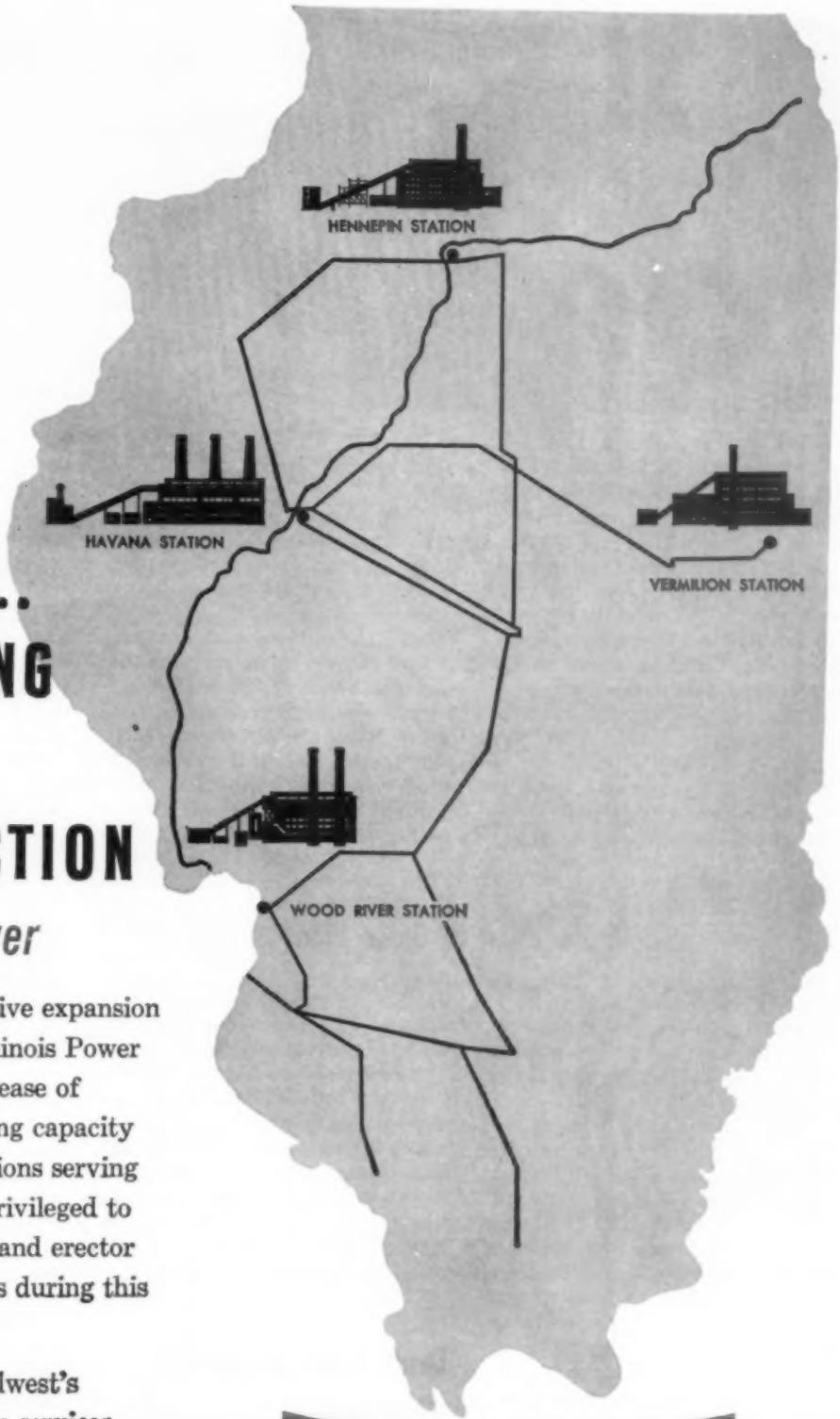
Size Grading

In the pioneering days of citrus fruit packing some genius devised a primitive means of grading for size. He cut two poles in the woods and trimmed them carefully to provide straight sides. He mounted them side by side, on a pronounced slant. The poles were set wider apart at the far end, so the space between gradually widened. When fruit was poured in at the high end it rolled down at slow speed, and when a piece of fruit could drop through, it did. Thus for different sections of the poles the fruit which dropped through could be called this size or that.

Now we have sizing shafts. They are 40 feet long, running the full length of the packing table. Each one has a core of steel. On this is mounted a series of brass tubes, or sleeves. Each sleeve is of uniform diameter throughout its length, and is of a different diameter from others. The sleeves are mounted on the steel core to form "lands," or steps, in decreasing diameters from the high ends of the sizing shafts to the low ends. Each "land" passes fruit of a certain standard size.

Underneath each pair of shafts is an equally long governor shaft, with cams on the ends for lowering or raising the shafts, spreading or closing the spaces between. Each pair of shafts is driven by an individual motor under one end.

The sizing shafts rotate in opposite directions, and quite rapidly. They spin the fruit upward, outward, and away from the shafts, to keep it traveling down the length of the tables. This spinning makes each piece of fruit present itself in different positions to the sizing shafts, so that it can find its way through the space between them at the proper sizing land. Grapefruit, it is obvious, might pass by its proper escape land if it presented itself in only one posi-



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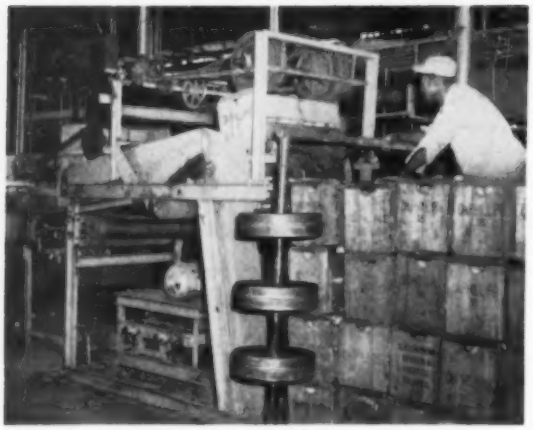


Rear end of the field-box dumping machine.

tion. Tangerines, which are flattened, and some oranges, might also.

Then this sizing mechanism must have two provisions for adjustment. For any given type of fruit the sizing shafts permit the fruit to escape at its proper land in the shafts. But this is not enough, for there are different kinds of oranges, and both large and small; there are large and small kinds of grapefruit; and fruit in general ranges from very large grapefruit to small tangerines. So there is the second provision, for adjusting the sizing shafts to accommodate any particular run of any kind of fruit.

When a piece of fruit does escape it falls on a softly cushioned, crowned and padded table, falling without injury, and rolls off gently to the lower, or outer, edge of the table, right in front of the packer.

Knock-down crates stored on the mezzanine floor are assembled and started down a gravity roller conveyor which runs between each two packing tables. There is just space enough between this conveyor and the packing table for a packer to work comfortably. The conveyor is at waist level. The packer lifts a crate from the conveyor, places it on a stand beside her, and packs fruit as it comes to her.

A man works back and forth in this aisle, wiring covers on filled crates, and putting them on a conveyor under the packing table which carries them out to the loading dock. He stamps each crate for size and kind of fruit.

The loading dock is conventional, consisting of a waist-high conveyor operated by a drag chain, running the full length of the dock. Railroad cars are loaded from one side, and trucks from the other, using portable roller conveyor sections for diverting the crates.

Not all the fruit goes to market in crates. Some is packed in corrugated boxes, some in fancy baskets, and some in the familiar net bags displayed in food stores and on roadside stands. But most of the big packers stick pretty close to the standard crate.

This plant at Fairvilla is typical for big operations, and is on the high side of efficiency. The compact layout filling the one huge room is a model for designing.

Bulk Handling in Glass Plant

(Continued from page 44)

53-foot long Helicoid screw conveyor feed gypsum at a rate of 14 tons per hour from the filter to the storage bins.

The Fuller-Kinyon system delivers gypsum from the storage bins to the day-use bins at a capacity of 10 tons per hour. The pump is driven by a 50 hp, 1200 rpm motor. It employs an impeller screw operating against a pressure gate to deliver a uniform rate of flow of gypsum into the compression chamber. Air for the compression chamber is supplied by a single-stage rotary air compressor, driven by a 75 hp, 690 rpm motor.

The Fuller control panel, which also serves as an indicating panel, is located next to the storage bins. It controls all movement of gypsum. An operator can direct gypsum from a car to any storage bin, and from any storage bin to any day-use bin. Level indicators in each bin prevent overflow.

Maintenance people have found that very little work is needed on the pneumatic conveying systems, which are practically trouble-free. But perhaps the most important aspect of the entire system is positive control. Gypsum can be sent where it is needed when it is needed — just by pushing a button.

Drum Leak Stopped With Epoxy Compound

AFTER TRYING a number of repair materials, Arkansas-Best Freight Systems of Fort Smith, Arkansas, decided to repair a defective steel container with an aluminimum-filled epoxy resin compound on a test basis. The drum was a 55-gallon single-trip "veteran" made in 1948. Due to its advanced age, a split approximately 1½" long had developed on the side.

The repair material used was Metalset A-4, made by Smooth-On Manufacturing Company. First the drum was laid on its side and the surface around the rupture was thoroughly cleaned. Metalset, which is packaged for one-for-one mixing by either weight or volume, was then applied to the repair area in the amount required.

The repaired drum was allowed to set on its side for 24 hours. The following day the drum was set upright, tested and found to be completely leak-tight.

The epoxy compound is now kept in supply at each of the company's major terminals. It is available for immediate patching of any containers discovered to be defective in transit. Savings are expected to be considerable.

ML-1 MOBILE NUCLEAR POWER PLANT

Weighs less than 40 tons... designed to operate 10,000 hours without refueling or overhaul. Turbine compressor section designed and built by Clark.

A NEW GAS TURBINE, scheduled for use in the world's first mobile nuclear-electric power plant, has reached the testing stage. The turbine-compressor unit is being built by Clark Bros. Co., Division of Dresser Industries.

Over a year in development, the turbine will be incorporated into a compact, power conversion skid which may then be operated in conjunction with the Army ML-1 portable reactor skid, as a closed cycle, gas cooled reactor turbo-generating system.

Areojet General Corporation is developing the ML-1 for the Department of Defense under contracts with the U. S. Army Corps of Engineers and the U. S. Atomic Energy Commission.

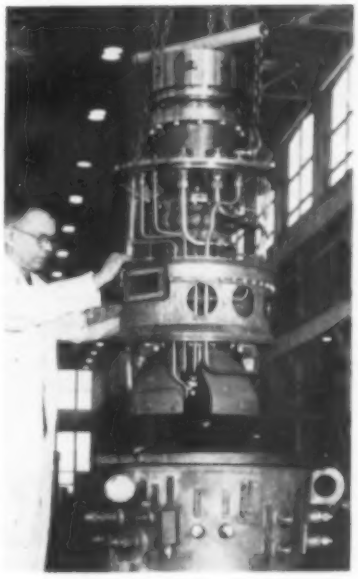
Designed to generate 330 kw, this prototype power plant is being developed to meet several important military requirements. It will be capable of transport by truck, air, rail, barge or sled. It is designed to operate in any climate, any location, and deliver rated output at ambient temperatures from 100 F to —65 F. The ML-1 can be set up in 12 hours, relocated in 24 hours after shutdown, and is expected to operate 10,000 hours without refueling or overhaul.

The mobile nuclear power plant will use nitrogen in a pressurized closed cycle system. The nitrogen is introduced to the compressor at approximately 8 atmospheres, compressed to 20 atmospheres, passed through a recuperator where it picks up heat from the turbine exhaust, and finally through the nuclear reactor which raises the temperature to 1200 F. As the hot nitrogen expands in the turbine, it provides energy to drive the compressor and the generator.

Recuperator Used

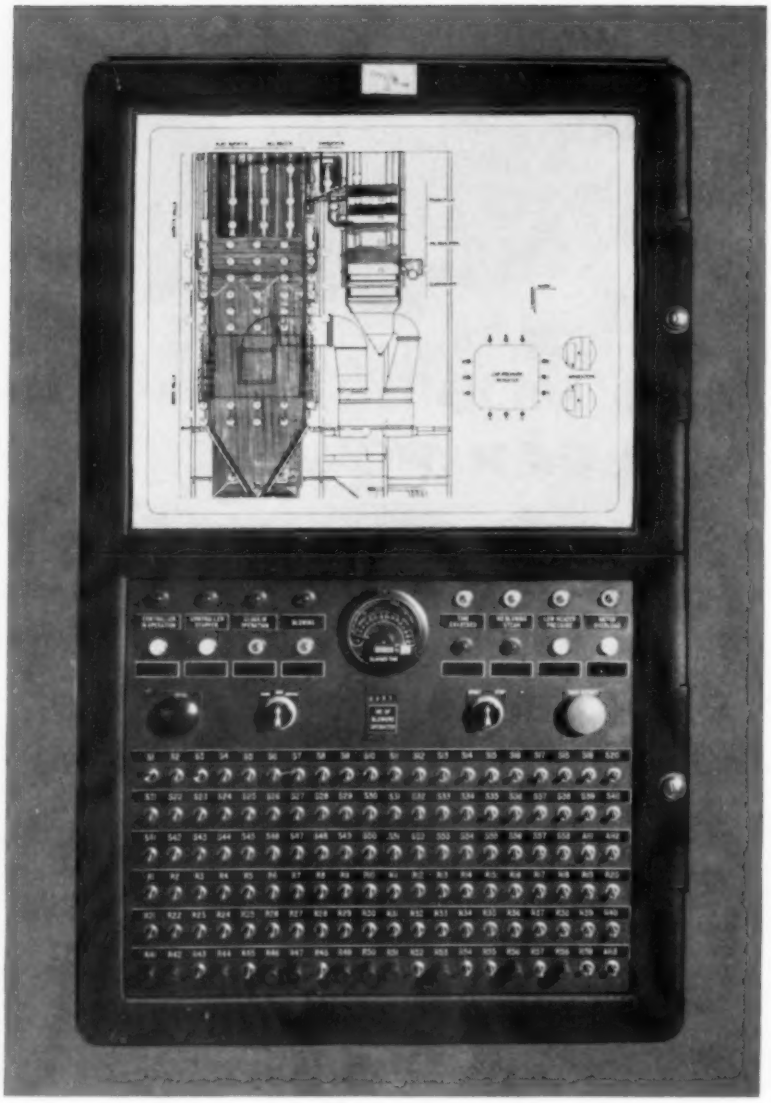
The use of a recuperator increases overall plant efficiency, reduces heat transfer requirements and size of both reactor and precooler. Nitrogen is used as the ML-1 coolant because of its low activation and excellent thermodynamic properties.

The turbine is a single shaft, axial flow type built to operate at 22,000 rpm. It is similiar to conventional axial flow units but is designed to weigh less than a ton. Light metals are used for static parts not subjected to severe temperatures. The compressor is also a high efficiency, axial flow type. Although designed for pressurized nitrogen, the turbine compressor set can operate with air under emergency conditions.



The turbine is seen, being lowered into its casing. It will operate in horizontal position.

Other characteristics of the ML-1 unit are: High mobility resulting from shielding matched to operational requirements; simplicity of operation and maintenance by enlisted technicians; ruggedness to withstand shipment and handling under adverse conditions.



Selective-Sequence Controller

Up to 120 electrically-driven long retractable Vulcan soot blowers can be controlled by this SSC-120 controller. With it the operator can monitor the complete blowing program and get an instant report should there be any malfunction. In such case, interlocks automatically stop the blowing until a correction is made.

Vulcan Selective-Sequence control offers the greatest flexibility in automatic soot blowing. It permits varying the sequence by individual blowers — at any time, and in any way found desirable to improve boiler cleaning or to save blowing medium. Tied to a built-in clock, it permits 24-hour scheduling with three or more sequences.

Vulcan Automatic-Sequential Control permits the operator to pre-select any number of units to be operated individually — not necessarily by zones or bands. Without leaving the panel he can revise the sequence at any time, or switch instantly to single-unit operation.

Both control systems are described in Bulletin 1029. Write for it.

With either system: A new console-mounted miniature panel provides even greater convenience and efficiency. Soot blowing may be tied to some such phase of boiler operation as steam temperature control, a refinement with which Vulcan has had more than six years of experience. And for the ultimate in soot blower control, the Vulcan system can be tied in with computer operation of the plant.

Vulcan "Automated" Soot Blowing

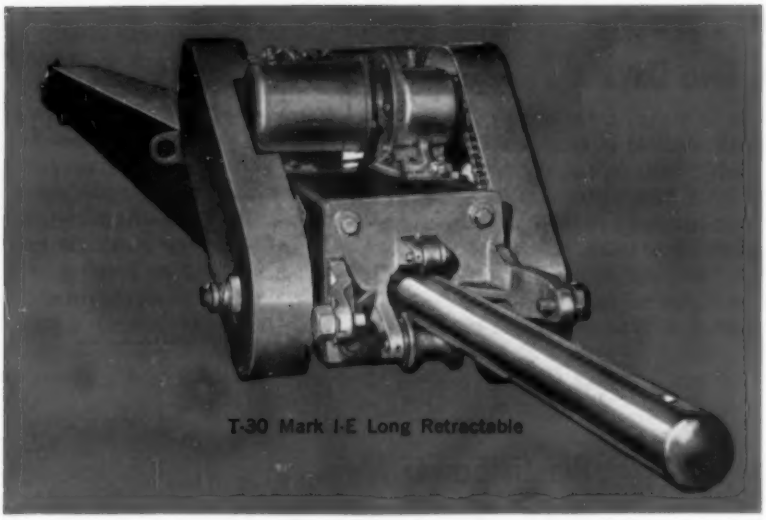
Modern boilers must be kept clean to operate efficiently—but the cleaning itself must be done efficiently to match modern operating procedures.

Vulcan precisely-controlled automatic soot blowing systems meet this specification.

They save time. One blower automatically follows another as programmed. Indexing is a matter of seconds.

They save labor. Merely pushing a button starts automatic operation. The operator or computer controls the whole system from one central location.

They save fuel. Cleaning is better because operation is positive and at proper intervals. Steam—which means fuel—and air are saved because of precise timing.



T-30 Mark I-E Long Retractable

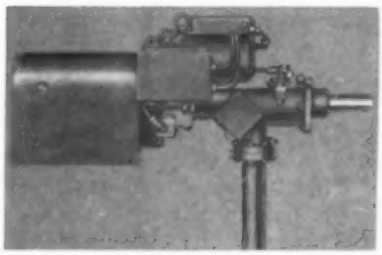
Vulcan RW-3E Wall Deslagger

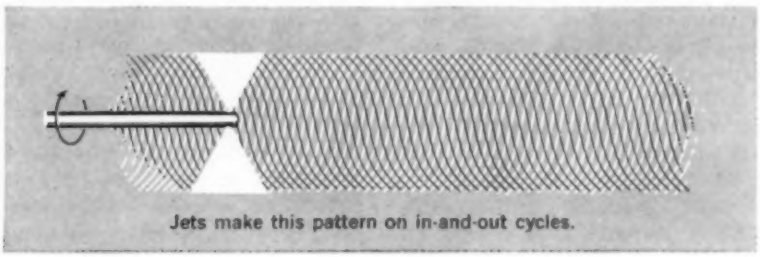
The high striking power of this electrically-operated deslagger drives off gummy, clinging masses or sintered ash to minimize average slag thickness. One motor extends and retracts the lance almost instantly. The other motor rotates the lance slowly for optimum cleaning. Air, saturated or superheated steam, or water—or any combination—can be used as the blowing medium. Blowing pressure may be adjusted while blowing. Maintenance is easy. Write for Bulletin 1034. Model RW-3A is air-driven. Write for Bulletin 1066.

Long Retractable Soot Blowers

The electrically-driven T-30 Mark I-E is the most modern long retractable soot blower for travels up to 24 feet. It has dual-motor drive. One motor moves the lance in and out. This can be a 2-speed motor to save blowing medium. The other rotates the lance—always in the same direction. The special-alloy lance can be used in almost any temperature. Low rotating speed increases range and penetration of cleaning, decreases wear, and eliminates whip. Write for Bulletin 1063. The T-30 Mark I-A, Bulletin 1073, is air-driven. For travels greater than 24 feet, the Vulcan T-30, Bulletin 1030, is used.

Rotary Soot Blowers with electric, air or manual operation are available for use in lower-temperature zones. Write for Bulletin 1072.





Jets make this pattern on in-and-out cycles.

Multi-Helix Jet Path

Because Vulcan long retractables have dual-motor drive, lance rotation is continuous with no stop-step action at the end of travel. The two jets always follow a different path in and out, forming an infinite number of reversed-helix paths on repeated cycles. This means thorough cleaning of all heating surfaces, minimized danger of tube erosion, and prolonged packing life.

saves time, saves labor, saves fuel

And maintenance is low. Each component of a Vulcan system is designed with maintenance men in mind.

Write for the bulletins mentioned on these pages. Copes-Vulcan Division, Erie 4, Pennsylvania.

Copes-Vulcan Division

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Welding Aluminum Parts Saves $3,000 in Two Days

A WEST VIRGINIA trucking company had accumulated an assortment of damaged aluminum truck parts, valued at $3,000, which were considered a total loss. Then Bell Lines, Inc., Charleston, installed a Heliarc welding torch manufactured by Linde Company.

Two days later, every discarded part had been reclaimed. The salvage operation paid the entire cost of the Heliarc torch and power unit, plus the overhead for labor and consumables.

Previously, Bell Lines occasionally contracted local shops for repairs on damaged aluminum parts. This permitted a slight dollar saving, but a loss of time. In many instances, when time was an important factor, the damaged parts would be scrapped and replaced with new factory parts.

Bell now uses the Heliarc torch for 75% of all its welding repairs. The company often repairs aluminum trailers still attached to the cab. If repairs are minor, the job is usually completed in a single pass. Whenever large breaks are encountered, the parts are first tack-welded in place and then filler metal is added to finish the job.

Dollar savings have been exceptional: A $450 aluminum transmission case can be welded in approximately three hours at a cost of less than $40, only 30 minutes of labor is required to salvage a $125 bell housing; a $130 aluminum trailer wheel can be rebuilt in two hours for $20. If a wheel was rebuilt at an independent shop, it would cost $55 and would not be returned to service for four days.

Bell's "do-it-yourself" policy has considerably reduced repair bills. And because truck and trailer manufacturers are using more aluminum parts every year, the firm estimates that Heliarc welding will soon handle 95% of its repair work.

Welder joins a damaged front cross member with a Heliarc torch.

Plastic Sewer Main Solves Soil Shifting Problem

FOR SEVERAL YEARS, officials of the Little Rock, Ark., Sanitary Sewer System have said they needed a pipe that would "give" with the shifting of the soil.

In one section of Little Rock, the earth heaved and moved in such a manner that sanitary sewer lines in the vicinity were disrupted. And when, by necessity, the lines were dug up, piping was found to be displaced or pushed and forced out of line for the entire sewer diameter and flow was stopped.

Looking for an answer T. W. Clapham, manager of the sewer system, turned to plastic sewer pipe because it seemed worthy of a trial in this difficult situation. The pipe used was manufactured by the Evanite Plastic Co.

Because the soil was gummy, wet, and unstable, the trench had to be dug wider than normal — even wider than sound construction practice would dictate. Depth of the trench varied from five to eight feet. A 6-inch bed of crushed rock chips was placed in the ditch and graded as closely as possible. Thirty-foot lengths of 8-inch Evanite plastic sewer pipe were lowered into the ditch as needed and solvent-welded in the ditch. In some cases wet trench conditions were encountered but this did not delay the jointing procedure.

After the pipe was installed, back-fill was placed around the pipe, and to a depth of 18 inches above the pipe and air tamped. The rest of the back-fill was placed in the ditch mechanically. Inspection showed no apparent infiltration.

Discussing a later inspection, Mr. Clapham said, "About five months after installation, we ran an eight-inch Sidu ball through this line to see whether or not the pipe had deformed out of round. At this time a 7½ inch Flexible auger was pushed through the pipe section with no difficulty. It was evident that the pipe hadn't gotten out of round and was not deformed, collapsed, or sheared off."

Better Lighting Economy

AFTER LONG study of the maintenance of our complex fluorescent lighting installations throughout the plant, we've adopted the factory recommended policy of re-lamping en masse, instead of replacing tubes as they burn out or become inefficient.

Thus, as some units darken from use, the entire circuit or installation has all of its tubes removed and replaced at the same time, with due regard to manufacturers' specifications and dependent upon the number of starts and stops. We have found that maintenance is simplified, and now we keep our lighting systems at top efficiency.

In addition, heretofore when a ballast burned out, by the time the circuit fuse blew, the ballast was so overheated it was dripping its compound over office and drafting room equipment. And when the branch fuse went, so did a whole row of fixtures on its circuit.

We have now overcome this aggravation by protecting each fluorescent fixture with a 1.5 amp fuse to every 8-foot 2-light unit. Now this fuse doesn't wait for the ballast to burn out and drip, since it kicks out at once and thus isolates only the defective unit.

By S. CLARK
U. S. Phosphate Co.
Tampa, Florida

ASME Oil and Gas Power Meeting

INTERNAL-combustion engines and their fuels dominated all but one of the 14 papers presented at the 33rd Annual National Conference and Exhibit of the Oil and Gas Power Division of the American Society of Mechanical Engineers, held April 9-13 in the Jung Hotel, New Orleans, and celebrating the 40th year of existence for the Division. Twenty-five exhibitors, showing products and offering services for the power industry, had on hand top executives and technicians to answer the questions propounded them by the 470 attending the meeting.

The final session of the meet, held on Thursday morning, covered automation — always a keynote topic at such gatherings. With Joseph T. Adams, District Manager, Nordberg Manufacturing Company in the chair, and Kenneth F. Shoephoester, Assistant Chief Engineer, Hartford Steam Boiler Inspection and Insurance Company as vice-chairman the session heard R. D. Hamilton, Assistant Manager, En-Tronic Division, Cooper-Bessemer Company, describe the manner in which Nantucket Gas and Electric Company achieved complete automation in a plant with three different sizes of engine-generator sets furnishing power for the area. The problem is complicated by the handling of residual fuel. The station operates unattended except for daylight hours, when maintenance personnel is at hand. One of the features of the automation is that of dead buss starting, which insures that another engine will be started and assume the load should the unit on the line go dead.

Ralph G. Abbott, Assistant Manager—Engineering, American Bosch Arma Corporation, explained a novel regulating device for changing automatically the gaseous fuel for a spark-ignition engine from an intermittently available low-cost, or waste, gas to a higher Btu gas until the waste gas is again available. The basic principle of the device, a metering regulator, is that the engine will automatically use the fuel that is easiest to get.

Charles R. Carmichael, Sales Manager, Amot Controls Corporation, closed the session, and the meeting, with a summary of current trends in engine control application. He noted that interest in automation and remote operation is very high in those fields of industry where operation ultimately permits its use. Yet the complication of controls proceeds at a rather deliberate pace which, the author concludes, causes the belief that the attainment of optimum control is more desired than complexity for its own sake. It was stated that properly designed systems, with adequate safety features, will return over their lifetime far more than their original cost and upkeep.

The application of resilient couplings to eliminate resonance in a diesel engine installation was described by Arthur S. Herman, Jr., Manager, Special Products, Koppers Company, Inc., who developed the design of a coupling carrying resilient blocks between the matching blades of the halves of the coupling mounted respectively on the engine flywheel and the driven shaft. By varying the composition of the blocks, the rigidity of the coupling may be varied to meet predetermined changes in resonance in the power system.

Pipeline use of dual fuel engines where the units are operated as gas diesels, as described by Erik Kelgard, Master Mechanic, Trans Mountain Oil Pipe Line Company, indicated that for best fuel economy the dual-fuel engines should be so arranged that when the engine is so operating combustion air is reduced to about 75 per cent that required for the unit operating as an oil diesel. Changes in ambient temperature affect fuel economy, or efficiency. For variable-load, variable speed engines, changes in pilot fuel timing and quantity as a result of speed changes also affect fuel economy. Control of these variables was found, on this pipeline, to make possible fuel savings of up to 20 per cent.

Leo T. Brinson, Jr., Assistant Chief Engineer, Nordberg Manufacturing Company, presented a method of evaluating the scavenging efficiency of a two-stroke cycle diesel engine. The experimental procedure withdrew a gas sample from the compression stroke and a similar sample from the cylinder on the expansion stroke. By developing the chemical equations of

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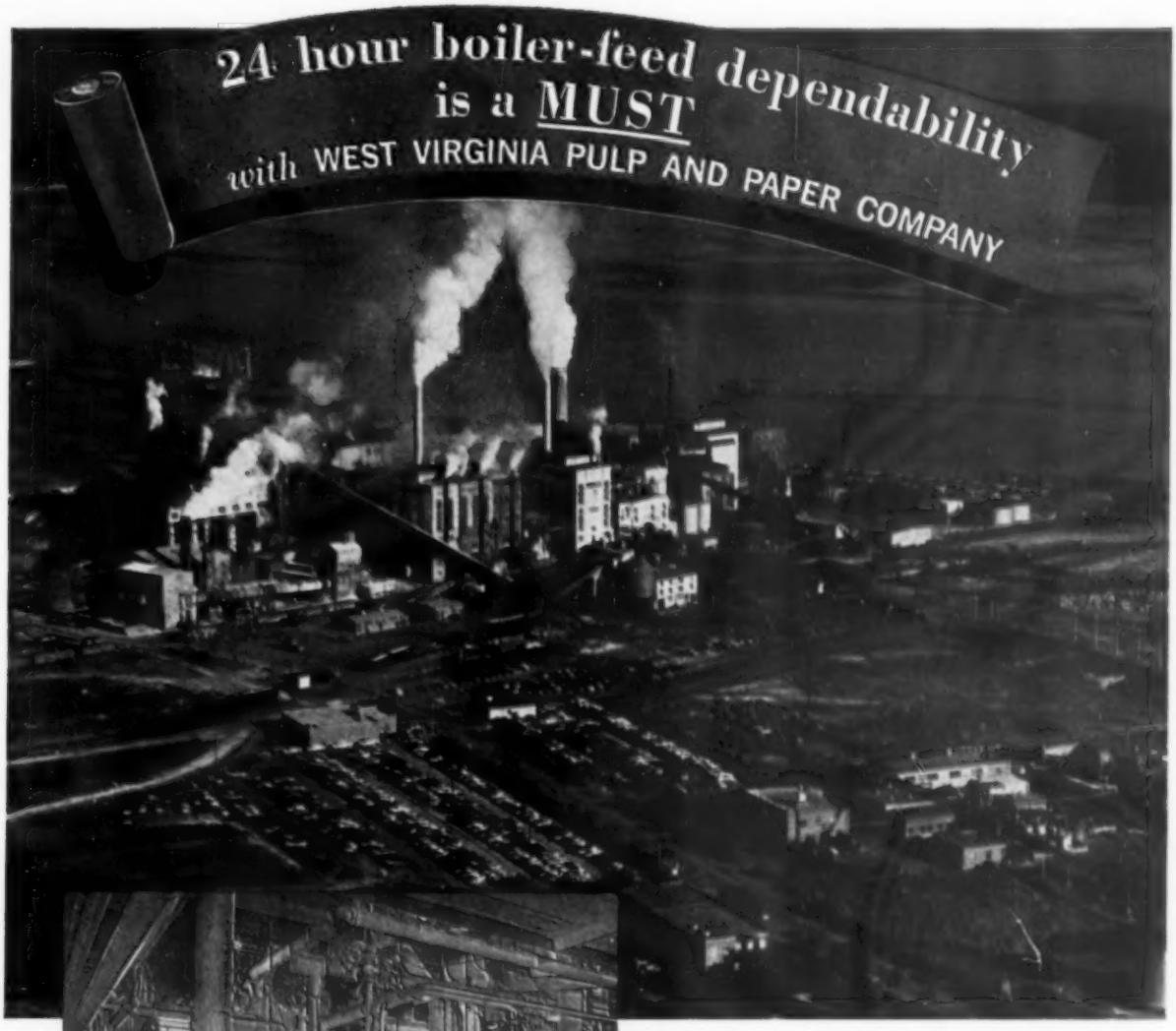
these samples and measuring the per cent volume of constituents of each, these can be related to the measured weight of fuel based on any convenient unit of time. The author developed equations illustrating his theory, concluding with one which, when applied to the dry products of combustion, permits mathematical solution of the excess air in a given charge.

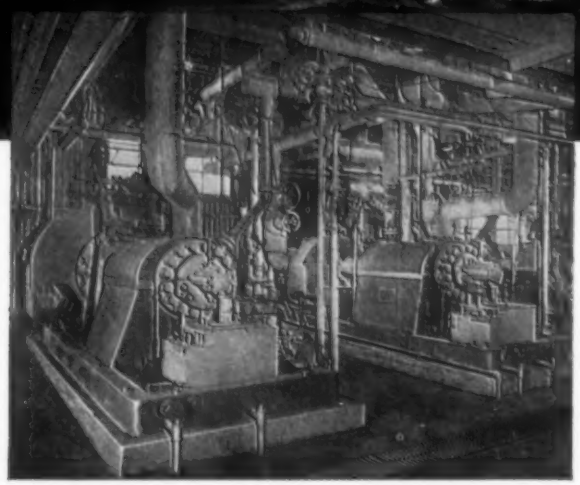
Clark Brothers Company's work on turbocharger selection, matching and development for two-stroke cycle spark ignition gas engines was presented by Robert L. Johnson, who, as head of the company's experimental and development department, co-authored the paper with W. H. Payne, manager, reciprocating research and engineering department and George H. Bollman, project engineer. The paper presented graphs showing the operating characteristics of a turbocharger compressor and turbine, and used them to discuss the matching of the turbocharger to the engine. Development problems were discussed relating to altitude applications, and the shifting of one blower's and turbine's flow capacities to meet several engine requirements.

Electrochemical cylinder corrosion, noted where dissimilar metals operating in the presence of an electrolyte — combustion products — may account for unusually rapid wear of a liner, according to conclusions drawn by J. M. A. Van der Horst, president of the Van der Horst Corporation, and W. A. Schultze, technical vice-president, Lemet Chromium N. V. Residual fuels, frequently high in sulfur content, require special safeguards when dissimilar metals are present in the combustion area. These findings, developed from test runs on an engine with chrome-plated liners and cast iron rings, demonstrate that very low rates of cylinder wear can be attained when the following points are adhered to: (1) chrome-plated liners; (2) chrome with channel-type porosity; (3) properly designed oil grooves; (4) tailor-made emulsion lubrication.

The 1962 Oil and Gas Power Division Conference and Exhibit is scheduled for Washington, D. C., April 15-19, at The Shoreham Hotel.

24 hour boiler-feed dependability is a MUST with WEST VIRGINIA PULP AND PAPER COMPANY





Pacific Type BFI pumps feed the latest boiler installation to help provide 1 million 620 thousand pounds of steam per hour required for 58,875 KVA power generation and plant process steam. A similar Pacific boiler feed installation is in 24-hour operation at the West Virginia Pulp and Paper Company plant at Luke, Maryland.

The Charleston, S.C. paper plant (illustrated above) is one of the largest producers of pulp and paper in the United States. The pulp mill processes 3 million 100 thousand pounds of unbleached sulphate pulp every 24 hours. The paper mill turns out 2 million 300 thousand pounds of linerboard, unbleached and extensible paper every 24 hours and several by-products.

Obviously, it takes a tremendous amount of power and steam to handle a job of this magnitude. The latest boiler installation at this plant is fed by three Pacific Type BFI 4", 10-stage pumps which are on the job, around-the-clock—*doing their part of the job.*

Pacific boiler feed pumps are second to none—in design, quality, performance, dependability, plus unparalleled parts and engineering service.

Write for Bulletin 122-A

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HUNTINGTON PARK, CALIFORNIA, U.S.A.

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OIL WELL PUMPS

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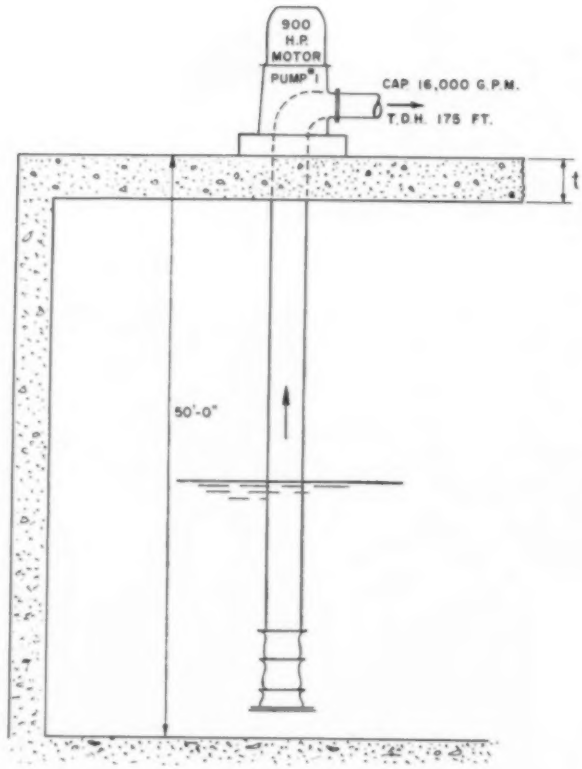
BF-31

Centrifugal Pump Clinic

QUESTIONS and ANSWERS
Conducted for SPI Readers

By
IGOR J. KARASSIK
Consulting Engineer and
Manager of Planning
Harrison Division
Worthington Corporation

More About Pump Thrust



QUESTION:

WE HAVE READ your very informative article pertaining to the effect of the thrust load on foundation design, which appeared in the March 1961 issue of Southern Power and Industry.

We have always considered a vertical pump supported as shown in your Fig. 1 as a self-contained entity and have therefore never included the hydraulic thrust in the total foundation load. We are in full agreement with your article in this respect.

One phase of your discussion puzzles us, however, and we would appreciate your comments on the following question: You state that for a pump such as shown in Fig.1 "The foundation will react strictly to the static weight of the pump and of its motor, plus the weight of the water contained in the pump." We are assuming here that you are speaking about the running condition. We would greatly appreciate it if you would give us your ideas as to how this water weight is transferred to the foundation while the pump is running.

After reading your article, another question was raised. In a deep setting vertical pump mounted as shown in Fig. 1, should the weight of the water be included in the total load used for determining the stresses in the column pipe during the running condition? We can readily see where it should be included for a pump with check valves or a foot valve. Here, if the motor stops, the column has to take the additional dead weight of the water. But we cannot visualize how, during the running condition, the dead weight of the water could act on the column itself.

If we were to assume that the dead weight of the water is supported by the closed impellers during the running condition, then this load would be transferred through the lineshaft to the motor bearing and if this were to be the case, then this dead weight would have to be included in calculating the total thrust on the motor bearings. To the best of my knowledge, the total thrust on the motor bearing is generally considered to be the summation of the hydraulic thrust, the line and pump shaft weights and the weight of the impellers. Your ideas on this question will also be appreciated.

ANSWER:

As stated in the article in the March 1961 issue, in the particular case illustrated on Fig. 1, the weight of the pump and motor is 21,050 lb, while the weight of the water in the column is 10,000 lb. The load on the foundation therefore becomes 31,050 lb.

Your question implies that you believe that the weight of the water acts on the foundation only when the pump is running. This is true only if no foot valve is used, that is, only if the pump column is

voided of water when the pump is standing still. Should a foot-valve be used, the weight of the water is added to the pump and motor weight whether the pump is running or standing still.

With regard to your first question, it should be remembered that unlike pressure, the weight of the water can act only in a "straight down" direction. Thus, the projected area of the diffuser vanes must support the weight of the water in the column. This weight, therefore, is transmitted to the column pipe through the diffuser vanes. In turn, this load on the column pipe must be transmitted to the foundation through the floor flange attached to the column pipe.

With regard to your second question, you are quite right in assuming that the weight of the water in the column is part of the foundation load and does not, *normally*, have any effect on the pump thrust. The latter consists, as you say, only of the weight of the rotor and of the unbalanced axial thrust.

The only exception to this would be the special case where the pump has a propeller of a diameter equal to the inside diameter of the column pipe and is not provided with a diffuser. Here, the weight of the water acting on the propeller would be transmitted to the foundation through the shaft, the motor thrust bearing, the motor frame and the pump driving head. In such a special case, the thrust on the motor bearing would have to include the weight of the water column.

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Fig. 9215-S
General Purpose Truck

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anco CHEMICAL CLEANING

removes rust, scale and deposits

In-plant service cuts cost, stops down-time

Just 24 hours can mean the difference between shutdown and better profits for you . . . that's all the time it takes for ANCO service experts to rid your heat exchange equipment of rust, scale, grease, or other deposits which build up in your equipment to cut into operating efficiency and bring the threat of costly shutdown.

Anderson Chemical Company's mobile cleaning service can rid your equipment of these harmful deposits safely . . . without interrupting production. These specially fitted mobile cleaning units are constantly on the move throughout the Southeast. They specialize in cleaning boilers, condensers, and other heat exchange equipment.

A call to your nearest Anderson Chemical Company office will bring an ANCO service representative to your plant. He will make an analysis of your rust and scale problem . . . then he will submit a proposal for your consideration . . . all at no obligation to you. You select the time most convenient for the cleaning process . . . nights, weekends, holidays . . . anytime.

Even the most intricate heat exchange system can be cleaned chemically . . . the ANCO way. Special solvents, formulated to dissolve and carry away deposits in your system, are pumped into the system. But ANCO's service doesn't stop there; your ANCO representative also will prepare a preventive maintenance program to keep your heat exchange equipment operating smoothly.

For complete details and an analysis of your water treatment problems, write today. There is no obligation.

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1—EMERGENCY CHEMICAL CLEANING — 4 page catalog highlights Anco solvents and service trucks available to remove scale, rust and other deposits from all types of heat exchange equipment. — ANDERSON CHEMICAL COMPANY.

2—Electrical Maintenance — New contract service (for Southeast only) inspects and tests motors, generators, gearing, control and distribution systems, at a cost less than 1% of value of equipment.—Atlanta office of WESTINGHOUSE ELECTRIC CORP.

4—Simplified Lubrication—You may be using up to five times as many lubricants as you need; up to five times as many ordering, billing, handling, stocking problems. Booklets on Multipurpose lubricants show how you can cut maintenance costs and inventories.—GULF OIL CORPORATION.

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6—Tool Truck—Save time with this compact truck carrying full tool selection to emergency repair jobs. Four drawer unit described in bulletin 8141-A, Semi-pneumatic 10" balloon tires ease heavy loads over rough pavements. — SNAP-ON TOOLS CORPORATION.

50—INDUSTRIAL WEED PROBLEMS? — Any man can weedproof 10,000 sq ft in ten minutes with Urebor — the dry granular weedkiller. You only use 1 to 2 lb per 100 sq ft. Folders give details on long-lasting control and your nearest distributor. — UNITED STATES BORAX & CHEMICAL CORP.

51—CHIMNEY PROTECTION—New non-asphaltic, spray applied coating for use in concrete, steel, and brick chimneys inhibits corrosion from acid exhaust gases. Customer field tests rate STACKFAS outstanding on heat, acid and fly ash abrasion resistance.—BENJAMIN FOSTER COMPANY.

53—Steam Line Treatment—Folder describes alkaline IPCO S-L-T. Used in boiler water, it will volatilize and travel with steam to return lines. Prevents costly repairs and provides insurance against replacing pipe and fittings. — IPCO, INC.

54—Repair & Maintenance Products—Complete product line shown in use with prices, sizes, weights, colors and styles. All products distributed by Rasco's 11 Southeastern Branches. — REYNOLDS ALUMINUM SUPPLY CO.

55—BETTER TUBE MAINTENANCE—Catalogs describe how line of air-powered tools and accessories (condenser cleaners, tube cutters, expanding brush head cleaners, etc.), are job-fitted to specific tube repair operations. — AIRETOOL MANUFACTURING COMPANY.

57—Maintenance Painting — The Porter Manual makes it easy for you to do the right thing with your paint maintenance dollar. Details Planning, Surface Preparation, Application, Film Thickness, Classification of Surfaces, Abrasion Resistant and Heat Resistant Finishes and Fungus Control. — PORTER PAINT CO.

94—Corrosion Control — Booklet, 20 pages — "Corrosion Control of Electric Light and Power Structures and Equipment" is designed to give company field operating men practical painting information on all phases of transmission and distribution work. Applicational photographs. — SUBOX, INC.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

109—PROCESS PUMPING—Factors of best economic balance in process pumping offered by new pipe-mounted centrifugal pumps highlighted in Type SPM Bulletin 142.—PACIFIC PUMPS.

122—Industrial Fans — Bulletin 702 covers Type XL fans for air and material handling. Volumes to 130,000 cfm pressures to 18" SP. Catalog 855 describes Pressure Fans. Volumes to 12,000 cfm, 10" to 50" SP — CLARAGE FAN CO.

123—Slurry Pump — Catalog describes the new SP-90 slurry pump which permits proportion of slurries in the mix tank to remain constant, with pumping rates variable from maximum to 1/5 of maximum.—MANZEL.

135—Air Cooled Heat Exchanger—Bulletin 132 describes air-cooled unit to solve the problem of water supply and disposal, cooling fluids or condensing vapors, removing heat at rate of input for close control of temperature. All parts of unit always accessible for easy maintenance with cleanable coils. Replaces both cooling tower and surface condenser. — NIAGARA BLOWER COMPANY.

163—Storage Water Heaters — Gas-fired, Scalefree 230 units described in Bulletin 4. Fully Automatic package requires only simple connections. Available in more than 100 storage and recovery combinations ranging from 250-4000 gal. — THE PATTERSON-KELLEY CO.

170—PUMPING PROBLEMS?—Two stage, Type JC pump will meet requirements up to 650 gpm. Horizontally split casing top can be taken off quickly for inspection and rotating parts removed and replaced without disturbing piping, connections, fittings or driver.—THE WEINMAN PUMP MFG. CO.

INSTRUMENTS—METERS CONTROLS—REGULATORS

205—Draft Gages — Bulletins describe inclined, vertical tube, air filter gages, straight line and dial pointer type, minified draft and receiver type gages, velocity gages and pitot tubes, gas analyzers and steam calorimeters. — ELLISON DRAFT GAGE CO., INC.

207—Control Centers & Systems—Combustion safeguard and automation packaged control centers insure full coordination of complete system, place responsibility on one source, insure correct wiring, and reduce field labor. Catalog C11 illustrates variety of designs and circuits now in use.—WEBSTER ENGINEERING CO.

212—Self-Powered Controls—Bulletin 620 describes self-powered automatic temperature regulators — no compressed air or electrical wiring required, no delicate mechanisms to adjust, no packing glands to stick, no shut-down due to power failure.—SARCO COMPANY, INC.

222—Pressure Regulators — Catalog No. 77 illustrates and describes application, operation and specifications for a complete line of reducing, back-pressure and pump-pressure regulators.—MASON-NEILAN.

Coming in AUGUST
Southern Power & Industry
PAINTS & COATINGS

Reference Guide and Buyer's Directory for the South-Southwest

Reference Guide and Buyers' Directory (included in SPI's regular August '61 Edition) will feature:

NEW PRODUCT BRIEFS & BULLETINS — paints, coatings, rust inhibitors, corrosion resistants . . . pretreatment, priming and finishing equipment . . . vinyls, epoxies, plastics, glass, etc.

SALES ENGINEERS serving you in The Industrial South-Southwest — Directory type listings including name, address and phone number.

This is SPI's annual technical service aid in the Paints & Protective Coatings field for 1961 — a real service to you and 17,300 other Consulting-Operating-Maintenance personnel in over 12,300 plants in The Industrial South-Southwest.

Bulletins (Cont.)

233—Control Drives — Product Specification P81-1 — Provides description, illustrations, ordering information, torque ranges, and dimensions of Bailey control drives for the positioning of regulating devices such as dampers, butterfly valves, rheostats. Actuated by pneumatic signals from automatic or remote manual control. — BAILEY METER COMPANY.

234—Soot Blowing Control Systems —Bulletin 1029, 16 pages, gives complete engineering description and illustrations of Selective - Sequence and Automatic - Sequential insert type panel controllers. List of typical installations shows wide variety of applications. — COPES - VULCAN DIVISION.

238—Auxiliary Alarm on Remote Gages—Bulletin C6 — Eye-Hye Remote Reading Gage with electrode and relay adaptation actuates auxiliary audible or visible sginals at high or low water levels.—RELIANCE GAUGE COLUMN CO.

255—Temperature Regulators—"Sliding Gate" units are simple, low cost, self-operating, automatic control valves for heating or cooling applications. Action easily reversed by rotating seats 180°; self-powered — no electricity or compressed air needed; easy to install. Bulletin J-180-1 describes ten standard ranges from 35-450 F.—OPW-JORDAN.

267—Remote Liquid Level Indicators —Bulletin RI-1825 describes indicators for pressures up to 3000 psi — advantages, operation and specific installations.—YARNALL-WARING COMPANY.

PLANT CONSTRUCTION—WELDING EQUIPMENT—SPECIALTIES

300—BUYER'S GUIDE—Up-to-date industrial and maintenance building products stock list. Includes complete listing of all Rasco distributed products plus branch locations. — REYNOLDS ALUMINUM SUPPLY CO.

301—Vacuum Cleaning Systems — How portable and stationary systems cut costs and increase plant efficiency shown in Booklets P8 and AB-100. Eight heavy duty units (1½ to 15 hp) for cleaning hard to get at areas, reclaiming valuable materials. — Air Appliance Div. of HOFFMAN INDUSTRIES.

306—Steel Buildings — Shed roof, gable roof frameless and gable roof rigid frame units described in Catalog SX-13757. 5,000 sizes available to meet all space needs. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

309—Fiberglass Panels having 20-year guarantee on panel color and light transmission characteristics are lowest-cost glazing you can buy on cost-per-year basis. Stylux-20 is shatterproof; provides up to 90% light transmission; does not pit or erode. Use for windows, skylights, sun shades, etc.—BUTLER MANUFACTURING COMPANY.

310—Incinerator — Metal cased, insulated, refractory lined incinerators for industrial and commercial use. City smoke code approved. Fast, economical, installation — any size and capacity. — NORTH STATE PYROPHYLLITE CO., INC.

315—Pressure Vessels — Catalog 100 discusses plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given.—J. J. FINNIGAN CO., INC.

325—Water Storage—The Cylindroid, a functional design for large-volume, low-cost, ground-level water storage described in 4-page catalog. Light steel construction, and smaller field erection crew are among savings over standard ground-level tanks.—GRAVER TANK & MFG. CO., INC.

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326—Beam-Type Guardrail—Manual FB-3456 describes how Flex-Beam Guardrail protects danger spots along roads, highways, bridges, and in industrial plant locations. Installation photos, drawings, reference data, dimensions and physical properties. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

332—Heat Transfer Equipment — If you have material to liquefy, heat, vaporize, superheat, condense, cool or solidify, check Bulletin HE-8 describing exchangers designed for temperatures as low as minus 160 F and as high as 1600 F with pressures ranging from vacuum to 9500 psi.—HENRY VOGT MACHINE CO.

357—Mechanical Lubricators—Various force feed mechanical lubricators, accessories, and components available for lubrication systems described in Bulletin L-60.—MANZEL.

390—Tank Insulation—An uninsulated tank is like a giant radiator heating the outdoors — and that costs money. 8-page Ultralite Tank Brochure tells you how you can save over 90% of this heat loss with glass fiber blankets. Can pay for itself in six months to a year.—GUSTIN-BACON MFG. CO.

PIPING—VALVES—FITTINGS STEAM SPECIALTIES—TRAPS

410—Flexible Connectors—How all-metal connectors absorb piping vibration described in Catalog 1D-100C. Convey corrosives, simplify misaligned hookups, and save installation time. Bronze, carbon steel and stainless steel.—UNIVERSAL METAL HOSE CO.

414—Acid Resistant Pipe — 4-page technical brochure covers properties of Union 20-S stainless steel. Alloy can be welded and put into service without subsequent annealing. Shows comparative resistance to 94 different corrosive agents.—REYNOLDS ALUMINUM SUPPLY CO. —UNION STEEL CORP.

415—Steam Trap — Bulletin No. 455-B describes the Float-Thermostatic steam trap with its entire operating element in one unit making it removable without disturbing inlet and outlet connection to the semi-steel trap body, suitable for 125 psi steam pressure.—SARCO COMPANY, INC.

417—Welding Fittings—Seamless and welded fittings featured in Bulletin 60-C. Features industry's most complete line of directional changes, branch connections, flanges and special types. — MIDWEST PIPING COMPANY.

421—Air and Gas Traps — 8 page Bulletin No. 289 describes complete line of ball float traps for draining water from air, gas or steam lines or draining a light liquid from a gas under pressure (for pressures to 900 lb). Includes: installation, selection and ordering information. — ARMSTRONG MACHINE WORKS.

429—Expansion Joints — Advantages of the Gun-Pakt expansion joint described in Bulletin EJ-1917. No shutdowns for repacking. Installational suggestions. — YARNALL-WARING COMPANY.

461—Reducing Valves — Bulletin 1027 describes diaphragm and piston operated regulating valves for pressure, temperature and liquid-level control. Complete specifications. — COPES-VULCAN DIV., BLAW-KNOX CO.

463—Stainless Steel Valves — Catalog 59 SS describes gate, globe and swing check valves with valve patterns in alloys that satisfy requirements of most corrosive services. Includes section on resistance of alloys to many corrosive media under varying conditions. — JENKINS BROS.

468—Steam Traps — 40 page engineering manual aids engineers and maintenance men in sizing, specifying and buying of steam traps and other fluid specialties. All data necessary to engineer a trap installation is included. — V. D. ANDERSON CO.

Bulletins (Cont.)

488—Power Piping Field Erection—Increased importance of piping erection proficiency is stressed in new 12-page brochure. Tells how field erection costs and quality are controlled and discusses welding and other technical aspects.—THE M. W. KELLOGG COMPANY.

497—Stainless Fittings—Welding fittings and forged flanges described in booklet. All specifications are included for Taylor line. Drawings and diagrams. — REYNOLDS ALUMINUM SUPPLY CO. — TAYLOR FORGE.

BOILERS—STOKERS BURNERS—FUELS

501—Packaged Steam Generators — DK units described in bulletin: 24 sizes for gas, oil or combination firing in capacities up to 60,000 lb/hr, with design pressures up to 600 psi. Special package boilers up to 100,000 lb/hr and field erected units up to 200,000 lb/hr for all fuels and all types of firing are featured. — E. KEELER COMPANY.

504—Steam or Hot Water for power, process or heat highlighted in 20-page Catalog AA-2. 20 through 600 hp units, fuel burning equipment and controls, service data, and available outdoor type enclosures detailed. — AMES IRON WORKS, INC.

516—Fuel Savings — How the packaged Ljungstrom air preheater boosts performance and offers fuel savings for small boilers and process applications is highlighted in 14-page Bulletin. Boiler as small as 25,000 lb/hr can have advantages of regenerative preheating — saves fuel, boosts output, and permits use of lower grade fuels.—THE AIR PREHEATER CORPORATION.

519—Feedwater Deoxygenation — 12 page Bulletin BW-7 describes advantages of chemical deoxygenation of boiler feedwater with an aqueous solution of Hydrazine. Covers in detail the properties and action of Hydrazine in maintaining boilers as well as recommended methods of application. — FAIRMOUNT CHEMICAL CO., INC.

529—BOILER - BURNER LEASE PLANS — New rental plan for Powermaster boilers and burner systems covers use of equipment and cost of installation without capital investment. — ORR & SEMBOWER, INC.

535—Unit Steam Boilers — Catalog AD-100 gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions. —CLEAVER-BROOKS CO.

536—Automatic Boiler-Burner Unit —Assembled plant (Scotch-type, two-pass) for all heat or power applications, low pressure or high pressure; burner to match for heavy oil, light oil, or combinations of gas/light or gas/heavy oil. Easy maintenance. Bulletin SPI-100 gives details. — INDUSTRIAL COMBUSTION, INC.

537—Waste Heat Boilers—Economical utilization of excess heat from diesel exhaust gases and from industrial and chemical processes described in Bulletin WHB-47-4. Bare tube and extended surface designs of varying capacities and applications covered. — FOSTER WHEELER CORPORATION.

552—RotoStoker—Cat. 860 describes overthrow spreader type stoker with power or hand operated dumping grates or stationary grates. Burns all grades of bituminous or lignite coals, many refuse fuels.—DETROIT STOKER CO.

557—Coal — Current brochure on "Prescription Coals." — A. T. MASSEY COAL CO., INC.

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558—BOILER AUXILIARY PACKAGE UNITS—Packaged system of various compact combinations of deareating feedwater heaters, boiler feed pumps, condensate surge tanks and blow-off tanks described in Bulletin 59-1. Standard units for steam plants of 10,000 to 100,000 lb/hr capacity and pressure to 300 psig. Higher capacity units also available. — WICKES BOILER CO.

566—Packaged Combustion Unit — Completely piped, wired and tested factory assembly described in Bulletin B8/30. Has Kinetic gas burner, manual firing valve, automatic diaphragm gas valve and electronic combustion safeguard system incorporating RA680 cabinet. Available in 3 sizes with 8 capacities from 800,000 to 3,260,000 Btu/hr. — WEBSTER ENGINEERING CO.

590—Packaged Rotary Burner—Fully automatic Roto-Pack forced draft units described in Bulletin; 6 sizes, 7 types to fit all automatically fired boilers or furnaces. Burn all grades of fuel oils, gaseous fuels or combination of both.—TODD SHIPYARDS CORPORATION.

591—Steam Generators — 18 sizes, from 20 to 600 bhp, for pressures to 250 psi, also for hot water. Complete details in Catalog 811F. — SUPERIOR COMBUSTION INDUSTRIES, INC.

POWER TRANSMISSION

600—Mechanical Shaft Seals—Chempro mechanical external seal described in Bulletin CP-551. First seal designed for complete interchangeability with packing. No mounting clamps, machinery stuffing box faces or drilling holes. Install in 30 min. Adjust after installation. — CHEMICAL & POWER PRODUCTS, INC.

610—Flexible Couplings—Catalog 60 describes couplings for maintenance-free power transmission — no lubrication and no wearing parts. Recommended basic coupling arrangements and load classifications are featured.—THOMAS FLEXIBLE COUPLING COMPANY.

651—Bearing Aluminum Bars — Aluminum bearings can replace bearings of other metals which cost twice as much. No sacrifice in performance or life. Catalog 46 covers composition, machining and use. — THE BUNTING BRASS AND BRONZE COMPANY.

WATER TREATMENT—HEATING & AIR CONDITIONING—DUST & FUME CONTROL—REFRIGERATION

700—Peak Load Problems? — Keep your air conditioning and refrigeration systems operating at maximum efficiency during peak load months. Catalog tells how Anco treatment removes rust and scale and kills slime and algae in equipment. — ANDERSON CHEMICAL COMPANY.

714—ALGAE IN COOLING TOWERS—Special report is two-year study of algae in cooling towers in all parts of the country. Valuable reference piece for your water treatment library.—DEARBORN CHEMICAL COMPANY.

702—Water Conditioning — Bulletin 611C, 20 pages, describes manual and automatic softeners, zeolites and ion exchange resins, mixed-bed and multi-column deionizers, dealkalizers, ion exchange systems, filters and purifiers, and water treating chemicals. — ELGIN SOFTENER CORPORATION.

703—Industrial Air Conditioner—Bulletin 122 describes methods to obtain control of air properties with accuracy of 1% in R.H. and 1 F in temperature (up to 140 F dew point) with compact high capacity apparatus. Entirely independent of the use of moisture-sensitive instruments. — NIAGARA BLOWER COMPANY.

706—Centrifugal Blowers & Exhausters—Catalog ACB-104 covers units providing uniform air pressure up to 10 psi, or vacuum up to 12-in. of mercury. Volumes to 20,000 cfm. Line provides clean, dry air or gas at constant pressure for many processes. — Air Appliance Div., HOFFMAN INDUSTRIES.

712—Ion Exchange — Bulletins discuss Two-Bed De-Ionizers and Mixed-Bed De-Ionizers, with photos to illustrate plant applications and diagrams to show operation.—ILLINOIS WATER TREATMENT COMPANY.

Bulletins (Cont.)

715—Amine Treatment—Return line corrosion is a critical problem in maintaining economical, efficient power plant operation. Bulletin CP-100 shows how amine treatment is an easy, effective and economical way to eliminate pipe corrosion problems.—THE BIRD ARCHER COMPANY.

716—Dust Collection — Whether nuisance elimination or process material recovery, check on Whirlex Dust Collector Units. Engineering data available. — THE FLY ASH ARRESTOR CORP.

719—No Frost Refrigeration—Bulletin 105 describes with diagrams and photographs method used for food freezing, chilling and warehouse refrigeration on largest scale without frost or ice formation, insuring full capacity and uniform temperature.—NIAGARA BLOWER CO.

720—Power Roof Ventilator—4 page Bulletin 550 illustrates and describes Centrilator, the centrifugal power roof ventilator with the exclusive "jet siphon." Includes capacity and dimension tables.—CLARAGE FAN CO.

723—Fly Ash Collection—Catalog 103 tells how "Double Eddy" goes to work to increase boiler fly ash collection. Buell Cyclones will not clog or plug even with loadings up to one pound of ash per cu ft of gas. — BUELL ENGINEERING COMPANY, INC.

724—Chemicals & Services — Water treatment chemical and engineering services for The Industrial South-Southwest highlighted in 12-page Bulletin 5000-A. Specific products and their functions detailed.—DEARBORN CHEMICAL COMPANY.

731—Film Type Exchangers—Bulletin HE-7 describes typical installations. Units can be cleaned while in operation. Serve as jacket water coolers, feedwater heaters, sulphuric acid coolers, etc., and can be designed to cool or heat any liquid and to condense or evaporate any fluid. — HENRY VOGT MACHINE CO.

733—Air Handlers — Technical bulletins describe air handling units 665-47,000 cfm capacity. — ACME INDUSTRIES, INC.

743—Compressor & Engine Filters —Bulletin 310-6, 4 pages, contains information on air filters for compressors and engines, designed to eliminate costs and delays of forced shut-downs caused by dust concentration. — COPPUS ENGINEERING CORP.

756—Refrigeration Problems?—VMC compressors, intercoolers, chillers, described in Bulletin 817 — design improvements, protective devices and factory - run - in - tests. — THE VILTER MANUFACTURING COMPANY.

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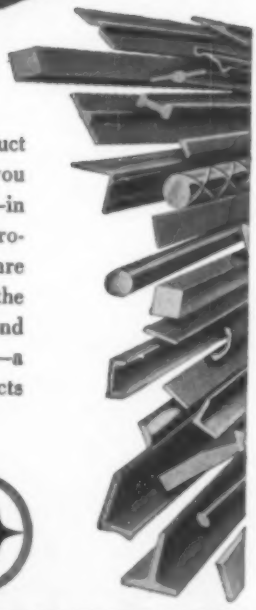

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Bulletins (Cont.)

780—COOLING WATER CONTROL—Bulletin describes the Chemicator . . . for automatic control of scale, corrosion and slime in cooling towers and evaporative condensers. Trouble-free design with no moving parts. — IPCO LABORATORIES, INC.

ELECTRICAL

804—CONDUCTOR IDENTIFICATION—New phase identification set (Bulletin 82SP) saves labor costs on phase determination and conductor identification on underground systems without need for removing all safety grounds. Transmitter operates from either 60 cycle supply or self-contained dry cells.—JAMES G. BIDDLE CO.

813—600-Volt Wiring—How Anaconda Densheath 900 offers long, life, high heat and moisture resistance, chemical stability and easy installation is described in Bulletin DM-5612. — ANACONDA WIRE & CABLE CO.

816—High Voltage Protection — 36 page catalog of linemen's protective equipment describes products for utility and industrial electrical fields. — CHARLESTON RUBBER COMPANY.

820—Electrical Maintenance — New contract service (for Southeast only) inspects and tests motors, generators, gearing, control and distribution systems, at a cost less than 1% of value of equipment. — Atlanta Office of WESTINGHOUSE ELECTRIC.

Late Bulletins

S-71—Horizontal Belt Conveyor — Bulletin 134A, 2 pages, presents a table-top conveyor designed for assembly operations, which can be furnished with variable speed attachment to synchronize with production speeds. — HYTROL CONVEYOR CO., INC.

S-72—Truck Selection — Technical Brochure, 8 pages, is designed as a ready reference for materials handling engineers in their everyday problems. Case histories and applicational photographs illustrate problems and solutions. — AUTOMATIC TRANSPORTATION COMPANY.

S-73—Rotary Feeder — Bulletin F-8, 2 pages, describes the "Dual Air-Inlet DA Feeder" for delivering and controlling the feed rate of dry, pulverized, and granular materials into high pressure pneumatic conveying systems. — FULLER COMPANY.

Smooth Motor Starting Cuts Maintenance

INCREASED drawing speeds caused some unwanted side effects for Johnston Manufacturing Company, Charlotte, North Carolina. Running at 420 fpm, full-voltage high-speed starting quickly developed a slight play in the gear mechanism of their new drawing frames. This, along with the initial "jerk" at each start, caused an uneven output product below Johnston's quality standards and resulted in frequent breaks in following processes. A few costly gears were also broken as the result of high-speed starting.

Variable Reactance

After dual-torque motors and standard primary reactor reduced voltage starters failed to produce substantial improvement, Square D Company developed a primary reactor reduced voltage starter with infinitely variable reactance which is proving highly successful.

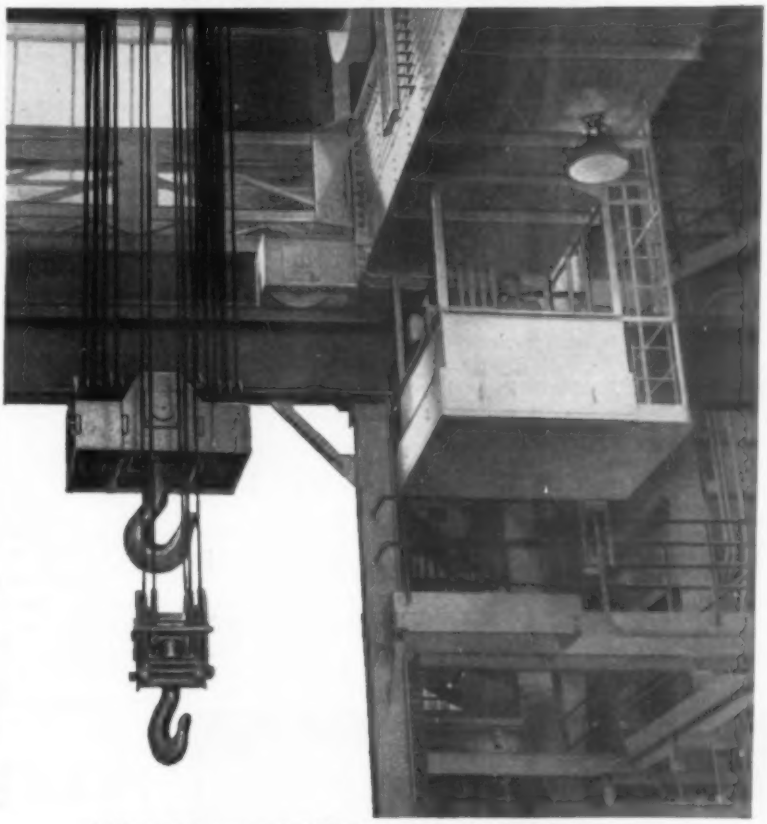
The reactance of the coils, which are connected in series with the motor during the starting period only, is easily varied over a wide range. The device can be set to provide different rates of acceleration and, being infinitely adjustable, can be matched to the varying characteristics of each machine, motor, load, and line voltage.

Before the new starters were installed, the acceleration time to full speed was less than one second. With the reactor starter, acceleration is smooth over a six second period with no "jerk." When full speed is reached the reactor coils are switched out of the circuit.

Since installation, an even higher quality has been consistently produced, resulting in less down time. No machine parts have broken, now that acceleration is smooth.

By Don Carter

The Shortest Distance Is OVERHEAD



With Shepard Niles JOB-MATED Cranes

Traveling cranes deliver the goods **directly,** from point to point within your plant or warehouse, or even from one building to another.

They move masses of material faster, more efficiently–speed up production–because they travel **over** obstacles, not **around** them. And they leave passageways, work areas, and grounds free of moving equipment, with greater safety for your employees and materials.

Best of all, traveling cranes allow you to increase your useable storage capacity by eliminating aisles, and enabling you to store material up to the beams.

Shepard Niles JOB-MATED Cranes with auxiliary hoists are not merely handling devices, but versatile, highly engineered machine tools that contribute directly to increased production and profits. You'll find them ideally suited for your production and storage requirements. Write for complete details on how Shepard Niles JOB-MATED Cranes will improve your profit picture.

Member of Electric Overhead Crane Institute
America's Most Complete Line of Cranes and Hoists

SHEPARD NILES
CRANE AND HOIST CORPORATION

1662 Schuyler Ave., Montour Falls, N.Y.

News of the South-Southwest

Continued from Page 17

Allis-Chalmers—Ala., La.

Two new distributors have been appointed for certain **Allis-Chalmers Industries Group** products.

The Gulf Coast Marine Supply Co., 199 S. Royal St., Mobile, Ala., becomes a distributor for Allis-Chalmers pumps in Washington, Clarke, Mobile and Baldwin counties in Alabama; and in Harrison, Jackson and George counties in Mississippi. The firm is headed by Marvin Mostellar. W. Carter Bryars is sales manager.

The New Orleans Armature Works, 2311 Tchoupitoulas St., New Orleans, La., has been named a distributor for Allis-Chalmers motors and controls in thirteen Louisiana parishes. Charles W. Hiers and Foster P. Hiers are partners in the firm, and Alex P. Judice is sales manager.

Fuller Co.—Houston

Fuller Company has announced the appointment of R. Kirk Booker as sales representative for its pneumatic conveying and process equipment, with headquarters in the Southern Division office, Melrose Bldg., Houston 2, Texas.

Mr. Booker previously was employed by the Fisher Body Division of General Motors in Kansas City, Mo.

Parker-Hannifin — Georgia & Louisiana

Parker-Hannifin Corp. announces that a distributorship on Crown filters, regulators and lubricators for compressed air systems has been granted to Simco Supply Company, Inc., 495 Piedmont Ave., N. E., Atlanta, Ga. William G. Simpson is president of the Atlanta concern.

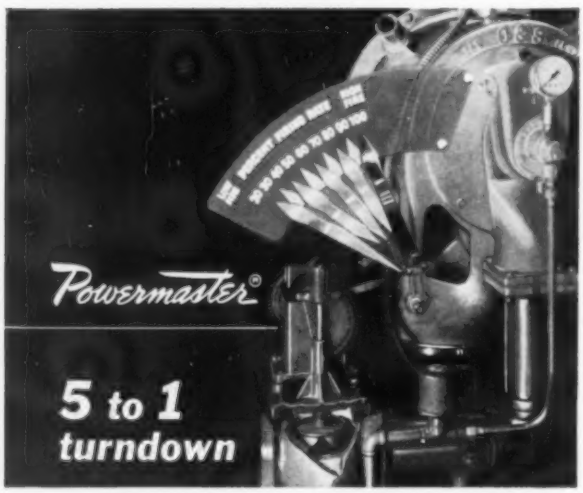
Moody-Price Inc., 2966 Lupine St., Baton Rouge, La., headed by Jere K. Price as president, has been franchised as a distributor for Parker industrial tube fittings and tube-working tools.

Both of the newly appointed firms will maintain substantial stocks for prompt filling of customer requirements.

General Rubber — Fla.

General Rubber Corporation announces the appointment of Dorcross and Associates, Inc., 463 N. E. 42nd Street, Fort Lauderdale, Florida, as its exclusive sales representative for Florida.

Dorcross and Associates employ four experienced sales engineers who are specialists on process and power piping and on all types of air conditioning and heating systems. They will handle the sales of the GRC line of rubber expansion joints and the SoundZorber line of flexible pipe and reducers.



. . . why it's important to packaged boiler buyers

Powermaster's exclusive 5 to 1 turndown gives you the same high efficiency whether you operate at a low of 20% or a high of 100% of capacity.

This exclusive feature eliminates waste of fuel in low or high operating ranges. You get impressive fuel savings that will repay the cost of your boiler many times in its long and productive life. Write for Bulletin 1260.

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Atlanta 9, Georgia

Southern News Briefs

Martin A. Ceder

John Cusick

Hyster—Kentucky

Hyster Company has announced the appointment of Martin A. Ceder, Inc., 2520 W. Market St., Louisville, Ky., to represent its industrial truck division throughout Kentucky and part of Indiana.

Martin A. Ceder is president of his company, and John Cusick has been named sales manager of the Hyster Division. The company has a branch on Industry Road, Lexington, Ky., headed by Parker Erwin. Complete sales, parts and service facilities for Hyster lift trucks, straddle truck carriers, and mobile yard cranes will be maintained.

Hills-McCanna—Okla., Mo.

Oil Capitol Supply Company, Tulsa, Oklahoma, and U. S. Supply Company, Kansas City, Missouri, have been appointed stocking distributors for diaphragm valves and ball valves manufactured by **Hills - McCanna Company**, Carpentersville, Illinois.

Chemicator ...

for simple automatic chemical control of cooling water

The Chemicator is specifically designed for automatic control of scale, corrosion and slime in cooling towers and evaporative condensers.

Simple, trouble-free design, has no moving parts or expensive electrical installation, yet gives positive low-cost control with savings up to 75% over usual methods. Complete satisfaction guaranteed.

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IPCO LABORATORIES, Inc.

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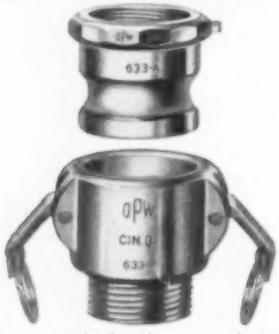
New Building for J. E. Sirrine—S. C.

J. E. Sirrine Company, Engineers and Architects of Greenville, South Carolina, have awarded construction contracts for their own new modern office building to be located on a three-acre site near the Greenville Airport. Sirrine President, George Wrigley, Jr., announced that completion is scheduled for January 1962 to coincide with the company's 60th anniversary. The general contractor will be Yeargin Construction Company; and the electrical and mechanical work will be handled by Davis Mechanical Contractors, both of Greenville.

The new Sirrine headquarters will provide 32,500 square feet of air conditioned office space in a unique two story design. Total construction and site development costs are reported to be in excess of one-half million dollars.

IT'S EASY

WITH KAMLOK QUICK COUPLERS



You save production time . . . when you replace time-wasting hose and pipe connections with Kamlok Quick Couplers. No tools needed. Your operator can do the job himself. Just fit together and pull the two cam arms down. Use them wherever your hose or pipe connections are periodically uncoupled (once a week or oftener). We probably have one to fit your needs. Why not send for more information? Inquiries are invited.

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Knox Glass Plant Atlanta, Georgia

The new multi-million dollar plant of **Knox Glass, Inc.** at Forest Park, Georgia, was formally opened on May 16. The plant, with a total floor space of 285,000 square feet, is located on a 30-acre site approximately a quarter of a mile southeast of Atlanta in Clayton County.

According to Walden W. Liston, the company's manager of manufacturing, the plant will employ approximately 250 local men and women and approximately three million dollars will be spent, during the first year of operation, for payroll, supplies and services. Robert S. Simpson has been named plant manager.

The plant includes two glass melting furnaces with daily capacity of over 200 tons, a batch plant, annealing lehrs, or "curing ovens," storage and shipping areas, garages, offices, and other necessary facilities. A railroad siding will handle the equivalent of 10 railroad cars of raw materials and finished products daily.

Knox officials indicated, that wherever feasible, the company will purchase its materials, supplies and services locally. Principal raw materials for glass making are sand, lime and soda ash. Satisfactory sand and lime are available in the area. The small quantities of soda ash required will be shipped in from other states.

According to a Knox spokesman, this fully automated and ultra modern plant contains the latest type of inspection devices and testing equipment to insure proper quality control.

The furnaces will produce flint or plain glass, and amber glass. It is the present intention of the company to increase capacity to produce both Georgia green and emerald green glass in the future.

Knox Glass, Inc. is one of the nation's major manufacturers of glass containers. The firm produces glass containers for the food, carbonated beverage, beer, liquor, wine, dairy, household and industrial chemical, medicinal and health, and toiletries and cosmetic industries.

New Orleans Plant Built By Donald Palmer, Inc.

Donald Palmer, Inc., 2627 Tchoupitoulas St., New Orleans, La., recently completed its new 20,000 sq ft, air conditioned plant in the city's industrial section. Provision has been made for future expansion.

The company has been engaged in the manufacture, design, and printing of specialty bags, sheets, and rolls for the past ten years. Materials include foil, mylar, polyethylene, and cellophane. Liners and covers are also produced.

Westinghouse Power Plant for Louisiana

A 12,000-kilowatt **Westinghouse** "Econo-Pac" gas turbine power plant — the first ever ordered — has been purchased by the City of Houma, Louisiana. The new self-contained automatically controlled unit was sold on a "turnkey" basis, which includes installation.

The complete package will be semiportable, with prefabricated construction, and it will be used primarily for low-use-factor peaking service of about 1,000 hours per year. The unit is capable of continuous service if required.

Houma, a city of about 27,000 population located in the heart of the

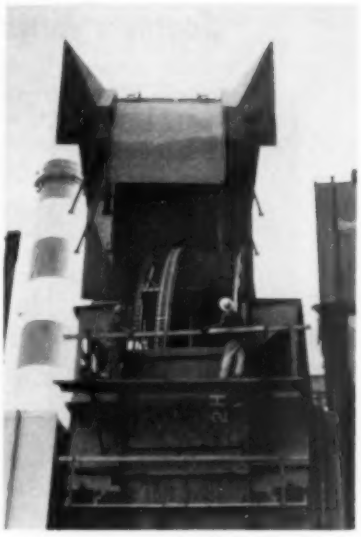
"gas country" southeast of New Orleans, will provide fuel for the new plant from its own wells. However, automatic transfer to distillate oil fuel is provided in the event of failure of the gas system with no disruption in power production.

The entire Econo-Pac plant requires only a flat concrete-slab foundation approximately three feet thick, plus electrical and fuel connections. This means that a unit can be in operation less than two weeks after delivery to the site.

Duke Power Company Installs New Preheaters

Duke Power Co. expects to save about 10 per cent on annual fuel costs for its new No. 5 boiler unit at Allen Plant, Belmont, N. C., with the installation of two Ljungstrom air preheaters, built by the **Air Preheater Corp.**

The preheaters will, at rated load, recover about 390 F of heat which is normally wasted. It is estimated that for every 40 F of heat recovered, a resultant fuel reduction of one per cent is realized. Weighing about 512,000 pounds each, the units will



increase the efficiency of the new 1,800,000 pound-per-hour pulverized coal fired boiler.

When placed in operation, the Ljungstrom preheaters will receive incoming air at 80 F and preheat it for combustion to about 575 F. To accomplish this, the heating elements are rotated through exhaust gases being emitted from the boiler at 660 F and then into the incoming combustion air stream.

The photograph shows the upper half of the rotor housing being lowered into position.

Tennessee Zinc Ore Agreement Reached

An agreement to mine and mill at least 20 million tons of zinc-bearing ores in a $6 million project near New Market, Tennessee, was announced recently by **Tri-State Zinc, Inc.,** and **American Zinc Company** of Tennessee.

Under the joint venture agreement, Tri-State will mine and mill the ore deposits owned by American Zinc. The agreement confirms a previous understanding, when Tri-State agreed to extend the drilling program carried out by American Zinc between 1954 and 1957, and, upon the successful completion of this program, to develop the mine and erect a treatment plant.

It is expected that the treatment plant will have a capacity of 2,800 tons of ore per day by summer of 1962 and this will ultimately be increased to 3,600 tons per day.

BETTER TOOLS FOR BETTER WORK

Whatever your tube maintenance problem— look to WILSON

Wilson has hundreds more to meet every tube maintenance need. Send for comprehensive Catalog 77-88.

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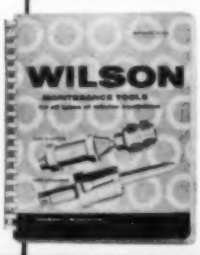

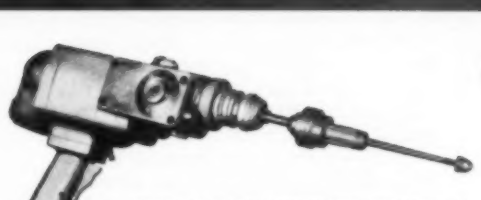
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SAFETY ZONE

— saves you money

ON EVERY VALVE

Every minute saved is money in your pocket. Cut out the waste of time, labor, floor space due to hard-to-reach valves. At the same time, convert Danger Zones to Safety Zones. Equip every overhead valve in your plant with Babbitt Adjustable Sprocket Rims with Chain Guides for day to day economy.

- They simplify pipe layout.
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- A hot-galvanized rust proof chain is available for all sizes.

Babbitt Adjustable Sprocket Rims with Chain Guide are carried in stock by most mill supply houses. Just phone your mill supply salesman, or contact us direct.

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STEAM SPECIALTY CO.

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Southern News Briefs (Continued)

R. E. Eddy

Orell Collins

Nalco—Fla. & N. C.

Promotions of R. E. Eddy and Orell Collins to Industrial Division District Managers, have been announced by **Nalco Chemical Company.**

Mr. Eddy, formerly Product Manager of Nalco's Papermaking Chemicals Department in Chicago, takes over the Southeastern District with headquarters in Jacksonville, Florida.

Mr. Collins, who was Area Manager in Nalco's Texas District, heads a newly created South Atlantic District, with offices in Charlotte, North Carolina.

New Georgia Plant For Procter & Gamble

The Procter & Gamble Manufacturing Company announced plans to build a synthetic detergents plant in Augusta, Georgia, which will employ 175-200 persons and have a million-dollar annual payroll when completed in early 1963.

Site preparation work is under way on a 283-acre tract in the Miracle Mile industrial district. Actual construction will begin early this fall. Procter & Gamble expects final costs for building, equipment and inventory to be in excess of $4 million.

The Augusta plant will be equipped to produce packaged synthetic detergents for household use. It will also be the warehousing and distribution point for Southeastern shipments of the company's soap products, toilet goods and food products.

Procter & Gamble has had a plant in Macon since 1909 for the production of edible vegetable oils and shortenings. A subsidiary, Buckeye Cellulose Corporation, has operated a cottonseed and soybean crushing mill in Augusta since 1903. Another subsidiary, The Clorox Company, operates a household liquid bleach plant in Atlanta.

Clark—Va. & Tex.

Homestead Materials Handling Division of Jefferds and Moore, Inc., 2701 Shenandoah Avenue, N.W., Roanoke, Va., has been appointed a sales and service dealer for the Industrial Truck Division of **Clark Equipment Company** in Roanoke and western Virginia counties. J. C. Jefferds, Jr., is president of the franchised dealership, and Wallace Jones is service manager.

At Houston, Texas, George Elam has been elected vice-president and general manager of Madden Equipment Corp., 1717 Franklin Ave., another Clark franchised dealer. Mr. Elam was previously manager of sales and services for the Industrial Truck Division in New Orleans, and prior to that he was Southwest district manager.

Westinghouse—S. W.

Verne O. Clements has been appointed assistant to the vice-president in the **Westinghouse Electric Corporation's** Southwestern apparatus sales region. In his new position, he will be responsible for apparatus sales to customers in the petroleum and chemical industry in the Southwest.

William M. Oliver has been appointed manager of the company's South Texas district, the position formerly held by Mr. Clements.

Both men have headquarters in Houston, Texas.

Link-Belt — Houston

Link-Belt Company has announced that Robert R. Henry, formerly sales manager for the Southwestern Division, has been appointed district manager at Detroit. Raymond A. Ibarguen succeeds Mr. Henry as district

manager for the Houston territory.

Mr. Ibarguen joined the company at the Dallas plant in 1948, moving to Houston in 1949. He served in various engineering capacities at the Houston plant, and in 1952 he became a district engineer in the Houston sales office. He is a mechanical engineering graduate of Southern Methodist University.

Allis-Chalmers—Tenn.

R. P. Certain has been appointed sales manager for **Allis-Chalmers** construction machinery division

branch office at Memphis, Tenn., where he was previously assistant sales manager. He was also associated with the company for a number of years at Amarillo, Texas.

Airco—Tampa

V. B. Cassilly has been appointed assistant manager-sales for **Air Reduction Sales Company's** Tampa District. In his new post, Mr. Cassilly will coordinate sales of Airco products in Florida and southern Georgia.

Mr. Cassilly was graduated from the College of Engineering at the University of Kentucky, with a bachelor's degree in mechanical engineering in 1957. He is a member of the American Society of Mechanical Engineers and the American Metals Society. His address is 503 Green Bay Ave., Brandon, Fla.

Vulcan Steel Container Names V. P. — Alabama

Vulcan Steel Container Company recently announced the election of Leo T. Ryan as vice-president of

sales, with headquarters in Birmingham.

A native of Alabama, Mr. Ryan attended the University of Alabama and received his degree in Commerce and Business Administration. He has been general sales manager of the company since 1958.

FWS&M—W. Tex. & Okla.

Fort Worth Steel & Machinery Company has announced the return of Russell H. Smith to its sales organization after an absence of almost four years. He is now district sales manager for West Texas and Oklahoma, with headquarters in the company's main office in Fort Worth.

Mr. Smith was supervisor of the customer service section in the Fort Worth office before leaving the company in mid-1957.

Conoflow—Houston

T. Jack Simpson has joined the R. Mack Goble Company, exclusive representative for **Conoflow Corporation** in the Houston, Texas territory.

Mr. Simpson is a graduate chemical engineer from the University of Houston, and has a well rounded sales background in the process industries.

C&EC Co
Continental
CONVEYOR
IDLERS
STANDARD DUTY
BALL BEARING
45° TROUGHING
SELF-ALIGNING TROUGHING
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Whatever your needs in bulk materials handling equipment, you'll find it in the Continental Conveyor line. Pulleys, Bearings, Take-Ups, Drives, Trippers, Feeders, Hold-Backs.
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FOR WATER *Softening* AND *Conditioning*. .

STRONGLY ACIDIC
-STRONGLY BASIC
TWO-BED DEMINERALIZER

Pictured above is a large heavy duty demineralizer with solo valve manual control, located at a Florida Air Force Base.
One of many demineralizers and water conditioners designed and manufactured by Southern Water Conditioning, Inc.
Write for further data, specifications, bids or surveys.

All types of Domestic, Commercial, and Industrial Water Softening and Conditioning Equipment: Filters · Taste and Odor Removers · Aerators · Demineralizers · Zeolite, Ion Exchange Minerals in stock · Residential and Commercial Package Swimming Pool Filters · Also Rebuilding and Modernizing

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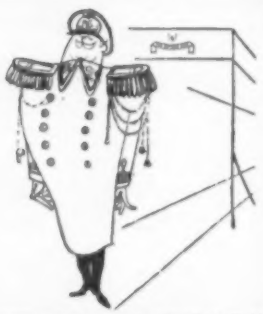

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Single $15 to $22 Suites to $60
Special rates by the month or lease

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ORegon 9-3900
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NEW Product Briefs

Bar Stock Handling Unit

G–40 A custom-built rider type bar stock truck to handle incoming shipments from receiving to rack storage, and from storage to screw machines, has been

introduced by **Lewis-Shepard Products Inc.**

Equipped with a bar stock handling boom and hydraulically operated lifting tongs and chain, the 6,000 lb capacity Model M Bar Stock handling truck can pick up whole cradle loads or parts of loads desired for movement.

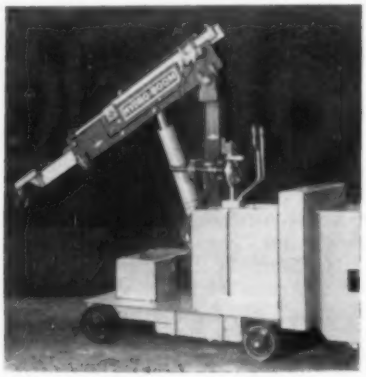
Floor Crane

G–41 A new counterbalanced mobile floor crane, designed to cut labor and allow for greater handling capacity, has been introduced by **Vanguard Manufacturing Company.**

This Hydro-Boom Model 135 is capable of lifting 3,000 pounds with the hook 48" beyond the front edge of the platform. It is self-propelled and will make a complete turn in a distance equal to its own diagonal length.

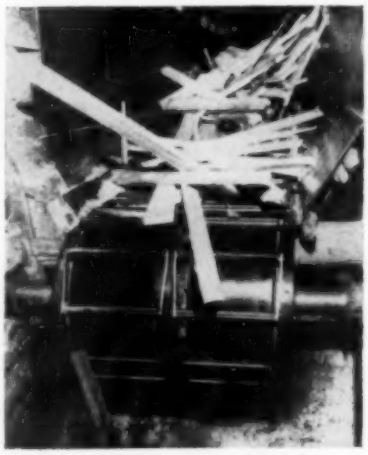
The boom movement is hydraulically controlled and permits 1/100th of an inch precision control of the hook in six directions of travel: up-down; in-out and right-left.

The crane is suited for changing dies, molds, grinding wheels, machine tool accessories, motors, and general maintenance applications.



Drag Conveyor Chain

G–42 A new, all-steel drag chain, designed for high impact and tensile loads, durability and easy maintenance has been introduced by **Link-Belt Company.** The welded steel chain is built to withstand the demanding requirements of drag conveyors in saw mills, paper mills and similar applications.



The chain operates on the same sprockets as H malleable iron and H combination drag chains. It is available in four sizes, 6 to 8 in. pitch, in widths from about 7 in. to about 16 in. Chain links are symmetrically designed with identical sliding area top and bottom which permits turning the chain over for added service life. Construction features include medium high carbon steel sidebars, sturdy pins, and new barrel design. Chains can be easily reworked in the field if distorted or damaged in operation. Special attachments can be welded to the steel links — even added after the chain is installed.

Battery Powered Auto Crane

G–43 **Auto Crane Company** announces a new line of battery powered material handling cranes designed for one-man handling of heavy items which require long boom handling.

Shown here is the Model ROC-24-LC, and one man loading transformers with precision. Power hoisting, power booming, and power rotating are just a few of the new crane's features. Precision spotting by one man from portable remote control station makes material handling easier and safer.

KEEP UP-TO-DATE
USE SPI
READER SERVICE

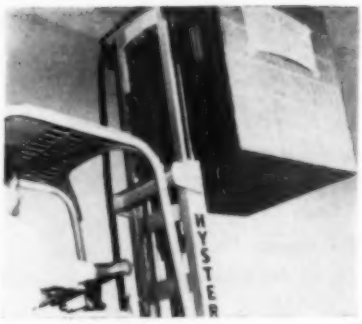
See pages 61 & 62

Vacuum Attachment

G–44 Development of a lift truck that makes practical use of vacuum to handle an assortment of loads — including such varied products as appliances, cased goods, bagged goods and paper rolls — has been announced by **Hyster Company.**

Using the internal vacuum principle, air is exhausted from a thin paper or plastic wrapping, drawing the cases or bags tightly together and locking them securely to the face plate of the lift truck attachment.

A compact exhauster unit is mounted behind the driver's seat, and a face plate is mounted close to



the upright. Experimental face plates developed so far include a flat plate that can be positioned vertically and horizontally; a special plate for handling cartoned appliances, and a paper roll face plate. The face plates are light, easily detachable, and can be switched in seconds by the operator, without leaving his seat.

Platform Lift

G–45 A new portable hydraulic telescoping platform lift designed for "high up" maintenance and warehouse work has been announced by **Grand Specialties Co.**

The automatic, battery powered unit is capable of placing a worker in any position from 8" to 120" above floor level to perform all types of jobs in the plant. It is operated through push-button controls, from the platform, by the worker. Capable of lifting a 750 lb load, the lift has a 20" x 30" platform plus numerous safety features.

ILLCO-WAY DESIGNERS AND BUILDERS
MODERN EQUIPMENT FOR ionXchange
AT 3 PLANTS OF
DETROIT EDISON

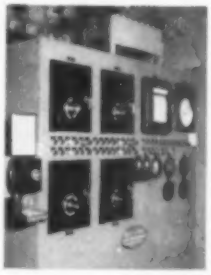
Four IWT installations, the first having been put in 7 years ago, are located in power plants of the Detroit Edison Co., as listed below. The picture at the left shows one of these stations.

RIVER ROUGE POWER PLANT—UNIT NO. 1
Triple Unit Two-Bed De-Ionizers, flow rate 80 gpm *each*, ordered in 1954.

RIVER ROUGE POWER PLANT—UNIT NO. 2
Triple Unit Two-Bed De-Ionizers, flow rate 300 gpm *each*, ordered in 1960.

MARYSVILLE POWER PLANT—UNIT NO. 1
Double Unit Two-Bed De-Ionizers, flow rate 170 gpm *each*, ordered in 1957.

DELRAY POWER PLANT—UNIT NO. 2
Double Unit Two-Bed De-Ionizers, flow rate 300 gpm *each*, ordered in 1959.



This picture, taken in the Marysville Power Plant, shows the IWT Control Panel which governs all functions of De-Ionizer regeneration. These control cabinets, which include indicating devices and recording instruments, are designed and built by IWT.

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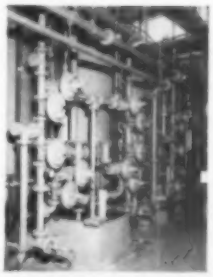

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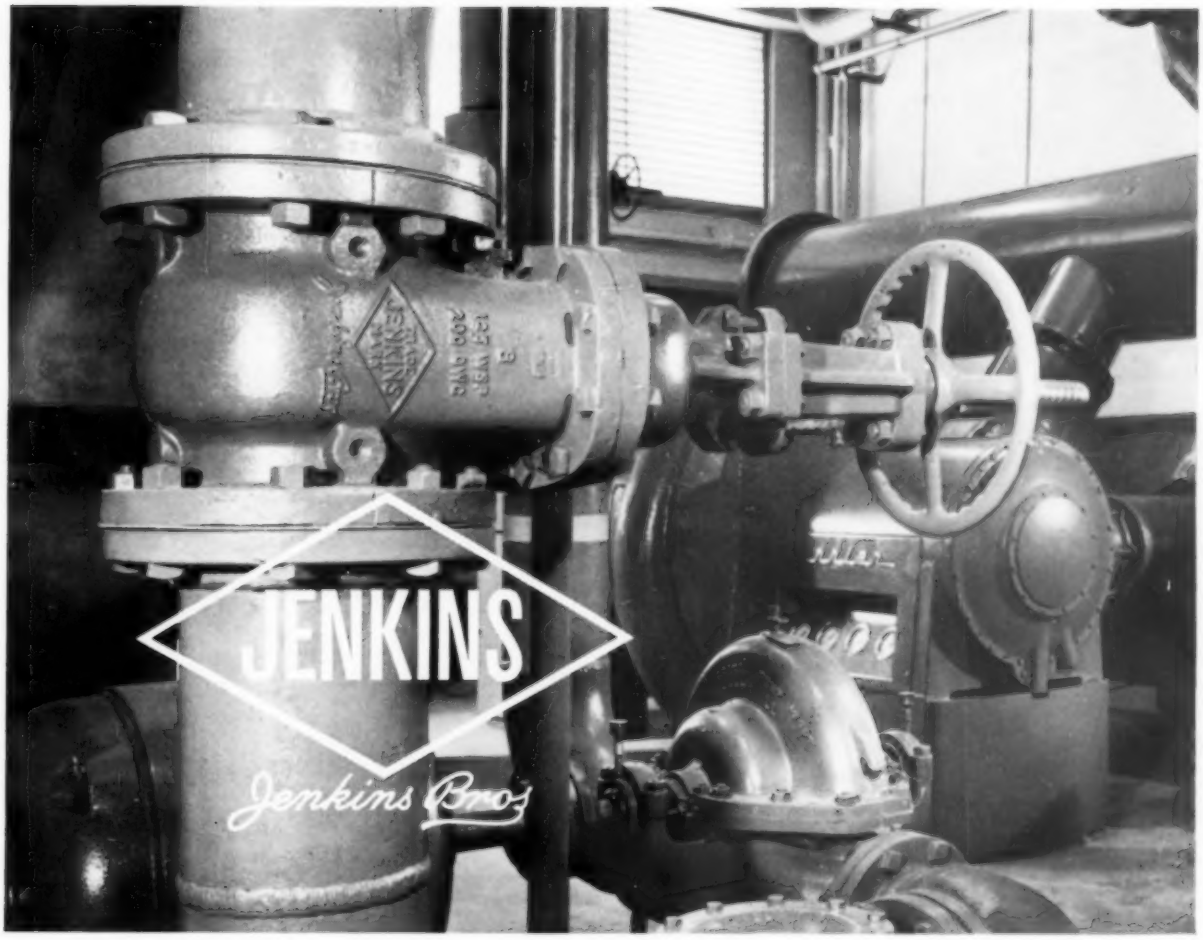

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